

1998 303(d) List of Waters for Kentucky

**Kentucky Department for Environmental Protection
Division of Water**

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TABLE OF CONTENTS

List of Acronyms
Citations and Regulations
Introduction
Public Participation In 1998 303(d) List Preparation
Status of High-Priority Projects Listed in the 1996 303(d) List
Ongoing Projects from Previous 303(d) Reports
Ohio River Impairments
Statewide Initiative To Address Water Quality Issues
Watershed Management Framework
TMDL Development Schedule
Programs And Progress Towards Addressing Water Quality Issues
Watershed Management Approach Implementation
Other Statewide Programs To Improve Water Quality
Methods of Assessing Use Support for 1998 305(b) Report
Recommended Waters for TMDL Development
Summary

Tables

Table 1. Alphabetic Index of 303(d)-Listed Streams
Table 2. 303(d) List of Waters for TMDL Development In Progress
Table 4. 303(d) List of Waters for TMDL Development Second Priority
Table 5. 303(d) List of Lakes for TMDL Development In Progress
Table 6. 303(d) List of Lakes for TMDL Development First Priority
Table 7. 303(d) List of Lakes for TMDL Development Second Priority
Table 8. Rationale for De-Listing of Some 1996 Waters

Appendices

Appendix A. Press Release: Public Comment Period for Draft 303(d) List of Waters
Appendix B. Response to Comments

LIST OF ACRONYMS

BMP	Best management practice
COE	United States Army Corps of Engineers
CSOP	Combined Sewer Overflow Plan
CSOs	Combined Sewer Overflows
DMRs	Discharge Monitoring Reports
EPA	United States Environmental Protection Agency
HUAWQ	Hydrologic Unit Area Water Quality
KDOC	Kentucky Division of Conservation
KDOW	Kentucky Division of Water
KNREPC	Kentucky Natural Resources and Environmental Protection Cabinet
KPDES	Kentucky Pollutant Discharge Elimination System
MSD	Metropolitan Sewer District
ORSANCO	Ohio River Valley Water Sanitation Commission
RM	River mile
TMDL	Total maximum daily load
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WET	Whole Effluent Toxicity

CITATIONS AND REGULATIONS

Clean Water Act, Section 104(b)(3)

Authorizes funding for grants to conduct and promote research, investigations, experiments, training, demonstrations, surveys, and studies related to causes, effects, extent, prevention, reduction, and elimination of pollution.

Clean Water Act, Section 303(d)

Refers to federal requirements in the Clean Water Act for states to develop a list of waterbodies not supporting designated uses. The Code of Federal Regulations 40 Part 130.7(b)(4) states that listed waters are to be prioritized for total maximum daily load (TMDL) development.

Clean Water Act, Section 305(b)

Section 305(b) requires that states submit to U.S. Environmental Protection Agency on a biennial basis a report assessing current water quality conditions throughout the state.

Clean Water Act, Section 314

Clean Lakes Program, the purpose of Section 314 is to work towards water quality improvement in lakes. The section also authorizes funding directed toward such efforts.

Clean Water Act, Section 319(h)

The purpose of Section 319 is to control identified nonpoint source pollution problems through the implementation of best management practices. Subsection (h) authorizes funding for nonpoint source pollution control projects.

Clean Water Act, Section 401

Section 401 Water Quality Certification, as authorized in Kentucky Revised Statutes 224.16-50, is a program that allows the state to issue, waive, or deny water quality certification for any federally permitted or licensed activity that may result in a discharge into wetlands or streams. The purpose is to protect wetland resources.

INTRODUCTION

Pursuant to Section 303(d) of the Clean Water Act, the State of Kentucky has developed a list of waterbodies presently not supporting designated uses. As required by 40 CFR 130.7(b)(4), these waters have been prioritized for total maximum daily load (TMDL) development. The purpose of this report is not only to list and prioritize impacted waters, but also to describe efforts that have been and continue to be made to address problems in waters listed in previous 303(d) reports. For additional information or questions, please contact the Water Quality Branch of the Kentucky Division of Water (KDOW) 14 Reilly Road, Frankfort, KY 40601, phone number (502) 564-3410.

PUBLIC PARTICIPATION IN 1998 303(d) LIST PREPARATION

A draft copy of this report was submitted to the U.S. Environmental Protection Agency (EPA) and released for public comment on March 11, 1998. A press release on this date (Appendix A) indicated that comments on the Draft 1998 303(d) List of Waters were being accepted and that copies of the report could be requested from the KDOW. The press release also referenced the Internet address where the draft 303(d) list could be found (posted March 11, 1998). In addition, a letter indicating the public comment period and Internet address of the 303(d) list was sent to a mailing list of interested parties. The mailing list included more than 150 recipients. Hard copies of the report were sent to any person who requested the report via phone, mail, or email. Persons accessing the 303(d) list through the Internet site could also submit comments via email. Hard copies of the report were also given to the Kentucky Water Interagency Coordinating Committee.

STATUS OF HIGH-PRIORITY PROJECTS LISTED IN THE 1996 303(d) LIST

Elijahs Creek and Gunpowder Creek, Boone County. Elijahs and Gunpowder creeks in Boone County are severely impacted by de-icing fluids applied to aircraft at the Cincinnati/Northern Kentucky International Airport. The headwaters of these streams are located on airport property. The streams then flow through rapidly developing areas prior to discharging to the Ohio River. Local public and media have expressed concern about these conditions, especially since the airport is undergoing significant expansion. This TMDL project focused on studying the impact the deicing fluids are having upon aquatic life, the reductions needed to restore the aquatic life use to these streams, and working with the airport to bring about the needed reductions. A report on the results of this TMDL project is currently under review. Water quality modeling was used to establish effluent limits that would be protective of water quality. These limits were incorporated into a new discharge permit for the airport which went into effect April 1, 1997. Fines for past violations were levied against the airport, and additional control measures were required through enforcement action that culminated in an Agreed Order with the airport, filed March 28, 1997. These activities are expected to significantly improve water quality and eliminate impairments in the near future.

Fleming Creek, Fleming County. Fleming Creek, a tributary of the Licking River, is 39 miles long and drains an area of 61,670 acres. The mainstem and tributaries are contained almost entirely within Fleming County in northeastern Kentucky. In 1995, Fleming County ranked third statewide in number of dairy cattle. There were 85 feedlot operations in this watershed. Moreover, it was estimated that 1.7 million cubic feet of animal waste has the potential to be washed into area streams annually from dairies alone, resulting in water quality degradation.

Baseline water quality monitoring for this project included bacteria and nutrient surveys throughout the watershed during both high- and low-flow conditions. This information was used to target best management practice (BMP) implementation. Further baseline monitoring consisted of biological and

physicochemical data collection at two of the more impacted tributaries and a station located on Fleming Creek downstream of most proposed BMPs. Biological communities will be compared over time to evaluate and document changes in community structure that reflect improvements in water quality. Comprehensive sampling was conducted prior to BMP implementation and will be performed afterward in order to determine if the BMPs have restored appropriate stream uses. Bacterial, biological, and physicochemical monitoring for the pre-BMP period has been completed, while post-BMP monitoring has just recently begun and will continue through several seasons. Additionally, land use will be compared between pre- and post-BMP periods. The post-BMP sampling is scheduled to be completed in the summer of 1999 and a final report prepared and submitted at the end of 1999.

The U.S. Department of Agriculture (USDA) and the Kentucky Division of Conservation (KDOC) are targeting BMP cost-share funds in the Fleming Creek watershed. In addition, Section 319(h) grant funds will continue to be used to assist with watershed coordination, BMP technical assistance, and education/outreach activities. A watershed coordinator will continue to be employed through the Fleming County Conservation District. The Community Farm Alliance is continuing to conduct student education and outreach efforts related to nonpoint source pollution control in the Fleming Creek watershed. A multitude of BMP projects have been implemented (1992-1997) in the Fleming Creek Watershed. They include riparian area protection zones, riparian exclusion zones, waste storage ponds and tanks, stackpads, and filter strips.

As for point sources to Town Branch, a tributary of Fleming Creek, the Flemingsburg wastewater treatment plant has a good record of compliance with effluent limits in recent years. Equipment upgrades and a pretreatment program established in 1990-1992 appear to be helping greatly at the Flemingsburg facility. The Farmers Stockyard (which received a Notice of Violation for unpermitted discharge) has implemented a waste management plan and built structures to cover much of the heavy use areas.

A report describing this TMDL project is under internal review and will soon be submitted to EPA Region 4. The Fleming Creek TMDL project encompasses segments of the following streams: Allison Creek, Craitown Branch, Doty Creek, Fleming Creek, Logan Run, Sleepy Run, Town Branch, and Wilson Run.

ONGOING PROJECTS FROM PREVIOUS 303(d) REPORTS

The status of various projects that have been listed in previous 303(d) reports is described below.

Upper Cumberland River, Southeastern Kentucky. This watershed area was listed as a high priority because of prevalent bacteria problems that resulted in swimming advisories in 1994. Areas listed were 13 miles of the Cumberland River, 25 miles of the Poor Fork below Harlan, and 3 miles of Looney Creek. A water quality investigation was conducted in July and August 1993 to identify the source(s) of fecal coliform bacteria contamination in the upper Cumberland River drainage. More than 100 samples were collected from the Cumberland River, tributaries, and municipal wastewater treatment plant effluents. As a result of the intensive survey, a monthly sampling project was established at selected stations for the 1994-96 swimming seasons. Most of the unacceptable fecal coliform bacteria levels (i.e., instream concentrations exceeding 400 fecal coliform bacteria/100ml water) were found in tributaries of the Cumberland River, as well as the Cumberland River itself in the areas of Pineville, Harlan, and Loyall. Swimming advisories were again warranted in 1995 and 1996. In an effort to reduce fecal coliform contamination in the upper Cumberland River drainage and eliminate the swimming bans, an enhanced enforcement action project was initiated. In 1995, permitted dischargers were warned by letter that noncompliance with Kentucky Pollutant Discharge Elimination System (KPDES) permit limits would result in a fine. Through 1995-96, significant compliance sampling was undertaken in the upper

Cumberland basin. The percentage of violations dropped from a high of 55 percent in 1995 to a low of 11 percent in 1996.

A number of previously listed and impaired stream segments (1992-98) are all associated with the upper Cumberland TMDL project. They are impacted by similar sources and impaired for swimming uses by fecal coliform bacteria contamination from illegal straight-pipe discharges and non-complying municipal/package plants. These stream segments are listed as in progress for the 1998 303(d) list because a TMDL and implementation plan have been completed. A report describing this TMDL project is under internal review and will soon be submitted to EPA Region 4. The upper Cumberland TMDL project encompasses segments of the following streams: Bailey Creek, Cumberland River, Straight Creek, Left Fork Straight Creek, Poor Fork, Cloverlick Creek, Looney Creek, Clover Fork, Catron Creek, Martins Fork, Richland Creek, Greasy Creek, Puckett Creek, and Yocum Creek.

Chenoweth Run, Floyds Fork Basin, Jefferson County. This urban stream was listed because it was not meeting the aquatic life or swimming use along its nine mile length. Poor water quality in Chenoweth Run is also impacting its receiving stream, Floyds Fork, which has been the subject of previous 303(d) reports. The KDOW applied for and received a U.S. EPA TMDL grant to conduct a study of the stream and recommend solutions. The report was published in June 1996 and submitted to EPA for approval as a TMDL. The U.S. EPA approved this project as a TMDL in September 1997. Three measures are needed to achieve standards: 1) phosphorus removal at the four million gallon per day wastewater treatment plant serving Metropolitan Sewer District's (MSD) Jeffersontown wastewater treatment plant; 2) creation of riparian zones and tree planting to provide shade over the stream; and 3) effective storm water management controls. The KDOW will be working with local agencies and citizen groups to implement these solutions. Phosphorus removal will be required at the next issuance of the discharge permit for the Jeffersontown facility in June 2000. MSD is currently designing these and other improvements to this facility, as well as conducting infiltration and inflow studies to reduce stormwater bypasses to Chenoweth Run. In June 1996, the Louisville and Jefferson County Department of Planning and Environmental Management issued the report "Implementation Plan Guidelines for Environmental Management Practices During Land Development in Chenoweth Run Watershed." This is the result of work by local agencies and concerned citizens to reduce the impact of future growth in this rapidly developing watershed.

Floyds Fork, Jefferson County. This TMDL project consisted of a study in 1991 to determine causes and recommend solutions for water quality problems throughout the 67-mile length of this stream and its watershed. The project was approved by the U.S. EPA in September 1997. The report noted a number of activities that were needed, the most important being the elimination of the numerous package wastewater treatment plants located throughout the basin through connection to or construction of new regional facilities. A site has been purchased by the Louisville and Jefferson County MSD for a new regional facility in northeastern Jefferson County that will eliminate 12 package plants. The facility is anticipated to be operational in 2000. This project is expected to significantly improve the 13 miles of stream that fail to meet water quality standards. The MSD Cedar Creek regional facility began operation in 1995 and has eliminated 5 package plants within the Floyds Fork basin. Nine more package plants will be eliminated in 1998. As noted previously in this report, the Chenoweth Run TMDL project is also expected to improve conditions in Floyds Fork. Oldham County, where the headwaters of Floyds Fork are located, has completed an "Action Plan" that describes needed sewer improvements throughout the county. Implementation of this plan will ultimately remove a number of package plants in the basin. Construction bids for the Crestwood portion of Oldham County are currently being sought. Crestwood drains into Harrods Creek to the north and Floyds Fork to the south.

East Fork of the Little Sandy River, Boyd County. The TMDL study conducted in 1992 identified six miles of the river plus numerous tributaries in this reach that failed to meet water quality standards for dissolved oxygen. U.S. EPA approved this project as a TMDL in January 1995. The source of the problem was attributed to the 50 package treatment plants that had been allowed to discharge over the course of the past 20 years. Some of these facilities were in complete failure. As a result of the TMDL, sewer lines have been, and continue to be, constructed to serve this growing area. Wastewater will be transported to regional facilities on the Ohio River. Nearly all of the package plants have now been eliminated. Additional sampling to evaluate water quality improvements will occur in the Little Sandy River Basin cycle starting in 2002.

Harrods Creek, Oldham and Jefferson Counties. The TMDL study conducted in 1990 found about three miles of lower Harrods Creek, which is essentially a backwater bay of the Ohio River, were in significant violation of several water quality standards. This project was approved as a TMDL by U.S. EPA in April 1995. The problems were attributed to the wastewater treatment plants located within and just upstream of the backwater area. Three of these facilities are owned by the city of Prospect. Permits for two of these facilities have been reissued with the condition that the facilities be removed and connected to MSD's comprehensive sewer system by the end of the five-year permit period. Prospect has adjudicated these permits based on their belief that the TMDL is flawed. Negotiations with Prospect are continuing. The KDOW has agreed to allow Prospect to become a regional wastewater authority and construct a pipeline to divert discharges from Harrods Creek to the Ohio River. The KDOW is drafting an Agreed Order with Prospect to define the conditions of this agreement. This agreement will likely be challenged by MSD. Oldham County has developed a planning document to address wastewater needs throughout the county, half of which lies within the Harrods Creek watershed. Part of this plan is to provide regional sewer service to the city of Crestwood, which will eliminate 11 package wastewater facilities and numerous failing septic systems. Bids for construction of the Crestwood phase are currently being sought.

North Fork Kentucky River, Southeastern Kentucky. This project was originally described in the 1992 303(d) list because of a swimming advisory on its entire 163-mile length. The TMDL was approved by U.S. EPA in January 1995. As a result of sampling studies and enforcement actions, the advisory was removed from the lower 76 miles in 1993. The upper portion of the basin, from the headwaters in Letcher County to Chavies in Perry County, remains under the swimming advisory. Stream and wastewater sampling have continued through 1998. A 1994 report, Removing Fecal Pollution from the North Fork Kentucky River Drainage, Ecological Support Section, Kentucky Division of Water, identified non-compliance of municipal and package sewage treatment facilities as well as straight-pipe discharges as the primary source of fecal contamination to the North Fork. Significant enforcement action and facility construction have resulted in an increased compliance rate and water quality improvement. The Jackson sewer district has a sewer system rehabilitation project underway with assistance from the state's revolving fund project to repair and upgrade the sewer system. New wastewater treatment facilities have been constructed and are operational for the City of Hindman and Beattyville. The Beattyville Wastewater treatment facility had significant fecal coliform bacteria exceedances throughout 1995-96, but has a good compliance record through 1997 after construction of a new treatment facility in 1996. The new construction also resulted in elimination of a correctional facility package plant. The Perry County Sanitation District collection system was overloaded and frequently bypassed raw sewage to the river. An upgraded collection system began operation January 9, 1997, and can now adequately route waste water to the Hazard wastewater treatment plant. The bypass of raw sewage to the river has been eliminated. The city of Hazard wastewater treatment plant has also had persistent problems. A new facility has been constructed and began operation on March 3, 1997. The new facility has a much better compliance record with its KPDES permit limits, although some exceedances of the fecal coliform bacteria limit still persist. The Hindman and Whitesburg facilities had marginal compliance rates through 1996-97. The new Hindman wastewater treatment plant began operation in August 1997 and should remedy some of these

problems. Additional enforcement action is currently underway due to frequent overflow of lift stations for the Hindman sewage collection system. Full attainment with water quality standards will be difficult to achieve in some areas that are without wastewater collection systems. Many of the homes in remote areas rely on straight-pipe discharges to small streams within valleys of rugged topography.

Efforts are also being directed towards resolving the fecal pollution in the upper North Fork of the Kentucky River from illegal straight-pipe discharges. An estimated 100,000 gallons of untreated domestic waste flows into the streams of Letcher County every day. A project with the goal of significantly reducing the number of straight-pipe discharges and inadequate on-site wastewater treatment systems in the Letcher County portion of the watershed was initiated in 1995. Project activities include: 1) an ongoing comprehensive education and public information program to raise community awareness of the problem and its solutions, 2) demonstration of alternative on-site and cluster wastewater treatment technologies appropriate to the steep topography and poor soils in the project area, and 3) implementation of a cost-share program to assist low-income residents to install on-site systems. The project was awarded \$398,000 in funding from a Section 319(h) grant and the Kentucky River Authority. During the last two years at least 27 straight-pipe discharges have been removed and 8 alternative systems have been implemented, including wetland, peat, and geo-flow aeration treatment systems. The Letcher County Fiscal Court recently approved the formation of a county-wide water and sewer district as a means for county government to assist with eliminating straight-pipe discharges. A county wide 201 facilities plan is being developed to better coordinate wastewater infrastructure development among the sewered communities and unsewered areas of Letcher County. The new water and sewer district is evaluating all sources of funding for the construction of sewer and water projects. These projects seek to initiate the long-term, continuous commitment of financial and institutional support necessary to eliminate straight-pipe discharges in the Upper North Fork watershed.

Taylorsville Lake, Central Kentucky. This TMDL project began in 1991 to address nutrient enrichment problems in the lake that had led to fish kills and hypereutrophic conditions. The lake had originally been listed in the 1990 303(d) list as a priority candidate for TMDL development. A report issued in 1994 by the KDOW determined the sources were primarily non-point in origin, these being from concentrated animal holding areas and erosion of phosphorous rich soils. The soils in this region are among the most fertile in the state. The soils have high levels of naturally occurring phosphorus that contributes to nutrient enrichment in the Salt River and to Taylorsville Lake. The United States Army Corps of Engineers (COE) worked to model the lake in an effort to determine the amount of nutrients it can assimilate without adverse effects. The COE experienced delays in this effort, and in September 1997 contracted with a consulting firm to complete the model. Calibration of the model is currently underway, with an expected completion date of mid 1998. The effect of phosphorous reductions to the reservoir on chlorophyll a, hypolimnetic oxygen, and trophic state will be modeled. Concurrent with this effort, nonpoint source controls and education programs have been and continue to be implemented. Taylorsville Lake is listed as in progress for TMDL development.

Agricultural BMP cost-share funds have been made available to remediate nonpoint source pollution in the watershed as part of a U.S. Department of Agriculture (USDA) five-year Hydrologic Unit Area Water Quality (HUAWQ) project. Two extensions to this project have also been granted. In addition, the KDOW, Nonpoint Source Section, has granted Section 319(h) money to fund BMP demonstrations in the watershed. The goal of the projects is to abate or prevent water quality degradation in both surface and groundwater in the watershed. To achieve this goal, the identified sources of contamination are being addressed by the use of BMPs. For fiscal year 1991 through fiscal year 1993, the HUAWQ project received a total of approximately \$850,000. In addition, \$55,000 in cost-share funds were awarded in fiscal year 1992 as part of a Water Quality Incentive Program for implementing non-construction, management-type BMPs. More than \$1 million has already been spent to implement BMPs to treat

wastewater from concentrated animal management areas on dairy farms. The 319(h) funded cost-share assisted in establishing a total of 109 animal waste facilities in the watershed. These BMPs were a first step in reducing nutrient input to streams in the watershed. In addition, a focused riparian area BMP project, funded with Section 319(h) grant funds, is currently underway. The Riparian Area Demonstration project was funded in May 1996 and involved the establishment of comprehensive nonpoint source water quality plans for 10 cooperating producers in the watershed. These plans define the riparian areas, detail fencing systems and facilitate rotational grazing. A total of 98 producers attended these educational demonstration events during 1996. Present and future BMP installations will focus on prevention of soil erosion. Post-BMP monitoring of streams in the watershed and in Taylorsville Lake will determine the effectiveness of the program.

Herrington Lake, Central Kentucky. Herrington Lake was identified in the 1992 305(b) report as not meeting aquatic life use because of low dissolved oxygen levels and repeated fish kills. The lake was given a medium priority in the 1992 303(d) report. The KDOW has collected water quality data from the Dix River just upstream of the lake since 1985. Additional baseline nutrient data have been collected at a site on Clarks Run downstream of the city of Danville's wastewater treatment plant outfall, at the Danville wastewater treatment plant, and at two other municipalities further upstream of the lake. In 1994, Section 104(b)(3) grant monies were obtained from EPA to perform an in-depth study of the sources of nutrients causing water quality problems and to determine the nutrient assimilation capacity of Herrington Lake. These monies were passed through the Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) to the U.S. Geological Survey (USGS). In addition, the USGS supplemented the study with calibration and validation of COE's CE-QUAL-W2 and EPA's WASP physically-based models. The effort provides an assessment of the lake's nutrient and trophic state dynamics and their link with land use and point source discharges. The study was initiated in September 1994. The USGS has completed the project, and a report is currently in review. Additional monitoring will identify sub-watersheds for BMP installation. Herrington Lake is listed as in progress for TMDL development.

The Herrington Lake - Dix River Watershed project, funded through 319 funds, is currently being initiated. The DOW, Nonpoint Source Pollution Control Program approved \$200,000 in federal funds to the Herrington Lake watershed project. The objectives of this project are: to install demonstration BMPs, target subwatersheds for nutrient control based on USGS monitoring and modeling, provide monitoring and modeling that will outline most effective BMP action, and to provide educational outreach. Project progress will be provided in future 303(d) reports.

OHIO RIVER IMPAIRMENTS

The 1998 303(d) list (Table 4) now contains some significant segments of the Ohio River mainstem along the northern border of Kentucky. The KDOW relies heavily on monitoring and data collected by the Ohio River Valley Water Sanitation Commission (ORSANCO) in determining potential for 303(d) listing. ORSANCO monitoring indicated impairments on all Ohio River segments for either fish consumption, aquatic life, or contact recreation. For these reasons, all Ohio River segments are included in the 303(d) list.

Fish Consumption. The entire length of the Ohio River bordering Kentucky is listed as partially supporting fish consumption use due to a limited fish consumption advisory. Fish tissue levels of PCBs and chlordane are too high for unrestricted fish consumption. However, recent ORSANCO fish tissue sampling has shown a downward trend in PCB and chlordane concentrations in Ohio River fish.

Aquatic Life. One segment of the Ohio River is listed as impaired for support of aquatic life. Biological sampling by ORSANCO indicated that the aquatic community is negatively impacted. The cause of impairment is believed to be degraded habitat conditions in this stretch of the Ohio River.

Contact Recreation (Swimming). Several Ohio River segments downstream of large urban areas are listed due to impairment from elevated fecal coliform bacteria numbers. ORSANCO monitoring indicated that fecal coliform bacteria concentrations within the river exceed state standards which result in swimming advisories, making unrestricted swimming inadvisable. Wet weather conditions result in combined sewer overflows and input of untreated sewage to the river.

STATEWIDE INITIATIVE TO ADDRESS WATER QUALITY ISSUES

Watershed Management Framework

In order to better identify high priority problems for 303(d) listing in the future, and better coordinate resources toward addressing these problems, Kentucky is adopting a Watershed Management Framework. The purpose of this management framework is to use programs, people, information, and funds as efficiently as possible to protect, maintain, and restore water and land resources. This approach provides a framework, in time and place, within which participating individuals and institutions can link and support one another's efforts in watershed management.

According to the adopted Framework, the state is divided into five basin management units (see Figure 1 and Schedule below) for the purposes of focusing management activities spatially. Activities within each unit will follow a five-year schedule (Figure 2), staggered by one year, so that efforts can be better focused temporally within a basin. Phases in the cycle include collecting information about water resources in the basin, identifying priority watersheds, listing the watersheds in the basin in order of priority and deciding which problems can be solved with existing funds, determining how best to solve the problems in the watershed, developing an Action Plan, and carrying out the strategies in the plan. Public participation is also encouraged throughout the process, allowing citizens and organizations to stay informed and have an active role in management of the resource.

Figure 1. Major River Basins of Kentucky

Figure 2. Basin Management Cycle

Basin Schedule. Each basin will be phased into the Watershed Framework schedule as listed below:

- July 1997 - Kentucky River Basin
- July 1998 - Salt and Licking River Basins
- July 1999 - Cumberland, Tennessee, and Mississippi River Basins
- July 2000 - Green and Tradewater River Basins
- July 2001 - Big Sandy, Little Sandy, and Tygarts River Basins

Benefits. Benefits of this approach to compliance with Section 303(d) of the Clean Water Act include:

- Better coordination of resource management activities around common basin management units and schedules:
 - Partnering can stretch limited dollars for implementation activities
- Better information about water resources without higher monitoring costs:

- More data as monitoring efforts are coordinated - a four-fold increase in assessment data is expected in the Kentucky River Basin in 1998
 - Better data as agencies standardize methods and procedures.
- Greater opportunities for citizen involvement

TMDL Development Schedule

The schedule for conducting TMDLs is based upon Kentucky's Watershed Management Framework approach. Waterbodies are prioritized based upon the type, extent, and intensity of impairment. Waterbodies within Kentucky for the most part share similar uses. They are assessed for support of warm water aquatic habitat and primary and secondary contact recreation criteria by default. Furthermore, a waterbody is assessed for drinking water use if a drinking water intake exists in that waterbody. No assessed stream or river failed to support drinking water use criteria. All waters with fish consumption advisories have ongoing remediation to eliminate this impairment except the Ohio River. The fish consumption advisory posted for the Ohio River is related to legacy contaminants, and recent fish tissue sampling has indicated a downward trend in PCB and chlordane concentrations. All waterbodies listed as "not supporting" are given first priority in TMDL development for their particular basin. All "partial support" waterbodies are given a second priority ranking. Waters will be further prioritized within each river basin management unit factoring in the use impaired, risk, and extent of public concern. All streams and lakes listed as "In Progress" in table 2 and a portion of table 6 are scheduled for TMDL completion within the next two years. DOW has targeted 1) Elkhorn Creek (South Fork Elkhorn, Town Branch, and Cane Run creeks) and 2) upper Salt River for pathogens TMDL development by 2000. Additionally, several western Kentucky 3) streams (e.g., Beech Creek, Brier Creek, Craborchard Creek, Cypress Creek, Flat Creek, Pleasant Run, Cane Run, Sugar Creek) with impaired use for aquatic life and swimming due to low pH from acid mine drainage are slated for TMDL development by 2000. Subsequently, all "First Priority" streams and lakes located within the Kentucky River Basin Unit are scheduled for TMDL completion by June 2002. The conceptual design for this schedule has been previously submitted to the U.S. EPA and is as follows.

Year 1, 1998 (July 1997 - June 1998)

Kentucky River Basin: Scoping and Data Gathering. Review the available data for the streams listed in the 1998 303(d) list in this basin. Collect more data where needed.

Other: Since this is the start-up year for the watershed approach, there are no other activities occurring as there are in future years. This would be the time to conduct any TMDLs from the 1998 list in other basins that perhaps stand out as needing more immediate attention.

Year 2, 1999

Kentucky River Basin: Assessment phase. Analyze the data collected in previous year. Set up any modelling that might be needed to determine a TMDL.

Salt and Licking River Basins (First year for these watersheds): Scoping and Data Gathering. Review the available data for the streams listed in the 1998 303(d) list in this basin. Collect more data where needed.

Year 3, 2000

Kentucky River Basin: Prioritizing and targeting: 303(d)-listed streams are already high priority and targeted appropriately. This year would be needed to complete modelling and calculate TMDLs. The 2000 303(d) list might have new streams in the basin. These newly listed waters would be a low priority until the Kentucky River basin cycle begins again unless there was an impairment in need of immediate attention. This would hold true for newly listed streams in any basin.

Salt and Licking River Basins (Second year for these watersheds): Assessment phase. Analyze the data collected in previous year. Set up any modelling that might be needed to determine a TMDL.

Upper Cumberland, Lower Cumberland, Mississippi, and Tennessee River Basins (First year for these watersheds): Scoping and data gathering, as described above.

Year 4, 2001

Kentucky River Basin: Plan development: Write the TMDL reports as individual watershed Action Plans. Submit to EPA and the public. Develop final Action Plans. TMDLs for all first priority ranked waters on the 1998 303(d) list for the Kentucky River Basin will be completed.

Salt and Licking River Basins (Third year): Prioritizing and targeting: 303(d)-listed streams are already high priority and targeted. This year would be needed to complete modelling and calculate TMDLs. The 2000 303(d) list might have new streams in these basins, which are low priority until the cycle starts again.

Upper Cumberland, Lower Cumberland, Mississippi, and Tennessee River Basins (Second year): Assessment phase. Analyze the data collected in previous year. Set up any modelling that might be needed to determine a TMDL.

Green and Tradewater River Basins (First year): Scoping and data gathering, as described above. Would include the streams listed on both the 1998 list as well as the 2000 list. It would seem, however, that the 2000 list would not likely have new streams in this basin, since the watershed cycle is just starting.

Year 5, 2002

Kentucky River Basin: Implementation (carry out the Action Plans).

Evaluate progress of TMDL development and completion. The first priority streams listed on the 1998 303(d) list will have TMDLs completed, not necessarily implemented. During the second five-year cycle for a particular watershed: the TMDLs developed previously will continue to be implemented, TMDLs for some newly listed high priority waters will be developed, and TMDLs will be developed for second priority waters on the original 1998 303(d) list. The end of the fifth year for a particular watershed will be a time to look at previous TMDL development, plan for the next five-year cycle, and make schedule adjustments.

Salt and Licking River Basins (Fourth year): Plan development: Write the TMDL reports as individual watershed Action Plans. Submit to EPA and the public. Develop final Action Plans.

Upper Cumberland, Lower Cumberland, Mississippi, and Tennessee River Basins (Third year): Prioritizing and targeting: 303(d)-listed streams are already high priority and targeted. This year would be needed to complete modelling and calculate TMDLs.

Green and Tradewater River Basins (Second year): Assessment phase. Analyze the data collected in previous year. Set up any modelling that might be needed to determine a TMDL.

Big Sandy, Little Sandy, and Tygarts River Basins (First year): Scoping and data gathering, as described above. Would include the streams listed on both the '98 list as well as the 2000 and 2002 lists. It would seem, however, that the new lists would not likely have new streams in this basin, since the watershed cycle is just starting.

Year 6, 2003

Kentucky River Basin (First year of new cycle): Scoping and data gathering, as described above. Include new Kentucky River streams from the 2000 and 2002 lists. Continue to develop TMDLs on second priority streams from 1998 list. The cycle continues as it has been outlined, addressing approximately half the 1998 303(d)-listed waters in the first five-year cycle, and some newly listed waters and remaining second priority waters in the second five-year cycle. For the Kentucky River Basin, the completion of TMDL development is scheduled for the end of the second five-year cycle in June 2007 (9.5 yrs from present). The last watershed cycle (Big Sandy, Little Sandy, and Tygarts Rivers) does not start until July

2001; therefore TMDL development will not be completed until the end of the second five-year cycle in June 2011 (13.5 years from present).

Salt and Licking River Basins (Fifth year): Implementation (carry out the Action Plans). All TMDLs for first priority 1998 303(d)-listed streams in this basin will have been completed.

Upper Cumberland, Lower Cumberland, Mississippi, and Tennessee River Basins (Fourth year): Plan development: Write the TMDL reports as individual watershed Action Plans. Submit to EPA and the public. Develop final Action Plans.

Green and Tradewater River Basins (Third year): Prioritizing and targeting: 303(d)-listed streams are already high priority and targeted. This year would be needed to complete modelling and calculate TMDLs.

Big Sandy, Little Sandy, and Tygarts River Basins (Second year): Assessment phase. Analyze the data collected in previous year. Set up any modelling that might be needed to determine a TMDL.

PROGRAMS AND PROGRESS TOWARDS ADDRESSING WATER QUALITY ISSUES

Watershed Management Approach Implementation

Approval of Watershed Framework. In September 1997, representatives of approximately 22 agencies and organizations came together for a public signing ceremony to demonstrate their show of support and willingness to cooperate under the Kentucky Watershed Management Framework. The Resolution of Mutual Intent was signed by 26 leaders.

River Basin Team Formed. With formal approval of the Framework, an 18-member Kentucky River Basin Team was formed in November 1997. This team was provided training on the Watershed Management Framework and oriented to their roles and responsibilities. Since formal approval of the Framework by the Steering Committee occurred two months into the basin management cycle for the first basin, several tasks for this team were already completed or well underway by designees of the Steering Committee. The Kentucky River Basin Team first met at a time when their initial role will be distribution of information, collection and compilation of feedback from citizens and organizations within the basin, and to help with identification of key individuals and parties for targeting purposes.

Information Management. One of the first activities in the basin management cycle is the compilation of existing data and assessments. Much of this information has been compiled and incorporated into a GIS database, providing an integrated source of information. The GIS has proved invaluable in visualizing potential impacts to the basin, in developing the basin monitoring strategy, and in producing educational material. Tabular data that feeds the GIS is being reviewed for locational accuracy on a basin approach. Two key information management tools, a physical-chemical data base and a state facilities' database, are soon to come on line. Both follow the data warehousing concept, and provide a central entry point to access a diverse array of information and an easy means for data sharing.

Basin Status Report. This report provided a convenient means for communicating information on the status of the basin to the public. The Basin Status Report was the joint effort of one non-profit group, one federal agency, and four state agencies. Printing costs were shared by three state agencies. To date, more than 6,000 copies of the Kentucky River Basin Status Report have been distributed to citizens in the Kentucky River Basin alone.

Basin Monitoring Strategy. An interagency technical group - a continuation of the Monitoring and Assessment Subcommittee from the Framework development process - met through the summer and into the fall of 1997 working through a process to define common terms, identify monitoring objectives, and lay out a strategy for collecting chemical, physical, and biological data on the Kentucky River Basin. This effort was complicated by the fact that surface and ground water concerns and strategies are being coordinated for the first time ever. Represented in the monitoring workgroup are universities, state and federal agencies, and citizens' monitoring efforts. The joint monitoring effort should result in a four-fold increase in assessments for the basin.

Citizens' Participation. A joint state/citizen-led group, called the Kentucky River Watershed Watch, was organized in the spring of 1997 with the intent to involve citizens in the basin management process in the Kentucky River Basin. The group went through six hours of extensive training on water quality issues, assessment data, and monitoring methods. From spring to fall more than 200 volunteers visited stream sites all over the basin, making field observations on habitat and land use and collecting water samples for analysis of pesticides, nutrients, metals, and conventional parameters. The training emphasized the need

for quality control, and samples were analyzed by a professional laboratory. Data were analyzed with the assistance of professionals and incorporated into a GIS environment. In November, a conference was held to discuss the results. The dialogue between agency officials, academicians, and citizens provided information and insight to both citizens and agency officials, with recommendations made for future action. The information collected on perceived problems through this process will be utilized to develop future 303(d) lists.

Additionally, a number of educational materials have been prepared and distributed to promote awareness of the Watershed Management Framework and opportunities to influence management of the basin. Among the materials produced include brochures, a video, conference posters, web sites, a watershed survey, a Basin Status Report, and numerous group meetings and presentations.

Funding. Several recent efforts have been made to make funds available for watershed protection. The KDOW may opt to promote non-regulatory solutions for source water protection by utilizing a portion of the Safe Drinking Water Act set-aside funds to provide assistance to public water systems, in the form of loans, to acquire land or conservation easements for source water protection. Furthermore, the Nonpoint Source Section of the KDOW that administers the Section 319 Nonpoint Source Grants program, has incorporated add-on points to favor grant proposals that follow the basin management schedule. Initially, proposals that promote citizens' participation and education in year one of the basin management cycle will receive bonus points; later, projects that implement approved watershed plans will receive additional points.

Planning. Kentucky statutes require each county to complete a source water protection plan by the summer of 1998; failure to complete this planning process will result in non-endorsement for future funding and permitting. This planning process has been adapted so that future updates of these plans will occur in coordination with the 5-year basin management cycle. Additionally, a few agencies have begun to rewrite their agency planning documents and schedule program activities to follow the Watershed Framework's basin management schedule.

Additional Statewide Programs To Improve Water Quality

The KDOW has numerous programs underway that are designed to improve water quality on a statewide basis.

Section 319 Nonpoint Source. Projects are funded through the 319 Nonpoint Source Program. The KDOW serves as the lead agency for this program, which involves the input and cooperation of numerous federal, state, local, and university organizations. From 1990-1997, a total of \$10 million was received from the U.S. EPA for 319 projects, which include education, technical assistance, watershed projects, demonstration projects, financial assistance, training, and/or enforcement. Section 319(h) grant funds will continue to be targeted to 303(d)-listed waters for nonpoint source pollution control activities.

Regionalization. Wastewater regionalization is a major effort toward eliminating package wastewater treatment plants by connection to larger regional facilities. Previous TMDL studies and data compiled by the KDOW show that these facilities often do not meet effluent limits because of poor operation and maintenance. Beginning in 1990, more discharge facilities have been inactivated than new ones constructed. In both 1996 and 1997, 62 small sewage package plants were eliminated for a total of 124 for the two-year reporting period. This includes eliminating package plants at schools, subdivisions, mobile home parks, and other small inefficient facilities.

Combined Sewer Overflows. Combined Sewer Overflows (CSOs) occur in sewer systems that carry both storm water and sewage. Currently, Kentucky has 17 combined sewer systems with 306 CSO points.

Discharge permits have been issued containing CSO language to all of these systems. Each permittee with an active CSO program has developed a Combined Sewer Overflow Plan (CSOP) which addresses alternatives to effectively prioritize and implement appropriate CSO controls. CSOPs include, but are not limited to, the required nine minimum controls. The evaluation of controls should incorporate a comprehensive watershed management approach coordinating combined, separate storm, and separate sanitary systems. Each program is updated through periodic status reports. Controlling CSO discharges will improve water quality in streams impacted by those discharges and play a part in the TMDL process.

State Revolving Fund. Kentucky's state revolving fund for municipal wastewater treatment facilities has been a key element in initiating various construction projects to resolve existing point source problems and provide additional treatment capacity. Since the fund began making commitments in 1989, 97 projects totaling more than \$216.8 million have been funded as of January 1, 1998.

Agriculture Water Quality Act. The Agriculture Water Quality Act was passed by the Kentucky General Assembly in 1994. The main goal of the Act is to protect surface and groundwater resources from pollution resulting from agriculture and silviculture activities and help restore waters that currently fail to meet designated uses. Many of the impaired waters in Kentucky experience problems from agricultural run-off. The Agriculture Water Quality Act requires all landusers with 10 or more acres to develop and implement a farm water quality plan based upon guidance from a Statewide Water Quality Plan. This statewide plan provides guidance to landusers on protecting the water resources in Kentucky. Technical assistance is available during the development and implementation of individual farm plans. Financial assistance may also be available. Landusers must select applicable BMPs to be included in their individual plan from the Statewide Water Quality Plan. Landusers will have until October 2001 to put the BMPs in place.

Section 401 Water Quality Certification. Section 401 Water Quality Certification, as authorized in KRS 224.16-50, is a program that allows the state to issue, waive, or deny water quality certification for any federally permitted or licensed activity that may result in a discharge into one acre or more of wetlands or 200 linear feet of a blue-line stream as designated on a USGS 7.5 minute topographic map. The state is to certify that the materials to be discharged into surface waters of the Commonwealth will comply with the applicable effluent limitations, water quality standards, and any other applicable conditions of state law. Discharges may include, but are not limited to, dredged spoil, solid waste, garbage, rock, and soil. The KDOW (1993) also has issued guidelines to mitigate unavoidable impacts to streams.

Whole Effluent Toxicity / Pretreatment. Two additional programs designed to protect and improve waters impacted by toxic discharges from permitted point sources include the Effluent Toxicity Testing program and the Pretreatment program. Whole Effluent Toxicity (WET) limitations are developed for both acute and chronic levels for aquatic life based on a case-by-case evaluation of the discharge type and volume and the size of the receiving water. In 1996-97, a total of 145 facilities (86 municipal and 59 industrial) conducted 1,589 toxicity tests as part of the WET requirement in their KPDES permit. During this time period, 119 facilities (70 municipal and 49 industrial) remained in compliance. The 82 percent compliance rate is very similar to the 1994-95 compliance rate of 84 percent. Continued reduction of toxic discharges is being achieved through new treatment plant construction, plant improvements, plant operational changes, removal of toxic sources and enforcement of pretreatment program requirements. The Pretreatment program regulates toxic discharges from industrial facilities into municipal sewer systems. Kentucky assesses the effectiveness of this program by reviewing wastewater sludge quality for a variety of heavy metals, including: cadmium, copper, lead, nickel, and zinc. Sludge quality showed continuous improvement in the 1994-1995 period and has not yet been evaluated for the 1996-97 period.

METHODS OF ASSESSING USE SUPPORT FOR 1998 303(d) REPORT

The lists of impaired streams and lakes for TMDL development (Tables 2 - 7) were derived primarily by reviewing all known and readily available water quality and biological data that could be found for the state's waters. The KDOW actively solicited water quality and biological data collected or reported by local, state, and federal agencies, as well as private organizations and academic institutions. Streams for which there were monitored water quality data or additional knowledge, such as pertinent evaluated data, are included in this assessment. Streams with only anecdotal information based on informal surveys or comments are not included. For further information on data sources or specific data requests, please contact Tom VanArsdall with the KDOW.

Monitoring Programs. Information from biological monitoring conducted by the KDOW in 1994-1997 at 49 ambient water quality stations, 11 intensive survey sites, and 40 reference reach sites was the basis of assessing support of aquatic life uses in many instances. Water quality data collected on a regular basis by: 1) the KDOW at 49 stations, 2) ORSANCO at 18 mainstem and five tributary stations of the Ohio River, and 3) the USGS and MSD of Jefferson County at numerous sites in Jefferson County was another means of assessing water quality and support of aquatic life and recreation uses. Additionally, KDOW surveys made on nearly 70 streams in the Green and Tradewater River basins that had been assessed as evaluated in the 1996 305(b) report; biological data from the Tennessee Valley Authority at 21 stations in the lower Tennessee River drainage in Kentucky; and data collected by the Lexington Fayette Urban County Government on five streams in Fayette County were also utilized in assessing water quality. Survey and monitoring data and evaluations provided by the Kentucky Department of Fish and Wildlife Resources district biologists allowed for the evaluation and assessment of many additional waters. Intensive bacteriological surveys by the KDOW in the North Fork Kentucky River basin, the lower Licking River basin, the upper Cumberland River basin, the Little Laurel River basin, and three lakes were also used in assessing the state's waters for recreational uses. Surveys were conducted of each of the KDOW's ten regional offices to identify additional problems and probable causes and sources of those problems.

Domestic water supply use was assessed by comparing the quality of finished drinking water to maximum contaminant levels set by EPA. These data are required by the Safe Drinking Water Act at public water systems as part of the Phase II/Phase V sampling program. Also, surveys of operators of drinking water plants on lakes regarding algal and taste and odor problems allowed some drinking water use assessments to be made for lakes.

Lakes were assessed primarily by: 1) a KDOW sampling program that periodically determines the trophic state and water quality of all Kentucky's major lakes and many of its smaller lakes by nutrient and chlorophyll *a* sampling during the growing season, 2) similar data supplied by the COE on several major impoundments, and 3) data collected by Murray State University on Kentucky Lake and Barkley Lake and by Morehead State University at several eastern Kentucky lakes through funding by Section 314 Clean Lakes and Section 319 Nonpoint Source grants.

Use of Data. Water quality data were compared with their corresponding criteria. The segment did not support the warmwater aquatic habitat use if the criteria for dissolved oxygen, un-ionized ammonia, temperature, or pH were exceeded in greater than 25 percent of the samples collected during the period of October 1995 - September 1997. The segment was considered to partially support aquatic life if criteria were not met in 11-25 percent of the samples. The segment fully supported warmwater aquatic habitat use when less than 11 percent of the samples exceeded criteria. Also, data collected prior to October 1995 were used where more recent data were not available. Generally, if these data were less than five years old, the waters were considered to be monitored. However, even if the data were older than five years, the

waters were often considered monitored if the data were still believed to be representative of current conditions. The most recent data available was utilized, although no data was disregarded based solely upon its age. In some instances, previously listed waters were retained on the 1998 list because there was no new available data.

Data for mercury, cadmium, copper, lead, and zinc were analyzed for violations of acute criteria listed in state water quality standards using three years of data (October 1994 - September 1997). Waters were partially supporting if more than one but less than 10 percent of the observations exceeded criteria and not supporting if criteria were exceeded in more than 10 percent of the samples.

In areas where both chemical and biological data were available, the biological data were generally the determining factor for establishing warmwater aquatic habitat use-support status. This was especially true when copper, lead, or zinc data were contradicted by biological data.

Biological assessments were done by means of selected metrics for fish, macroinvertebrates, and diatom communities and habitat and physicochemical characteristics. A waterbody did not support its designated uses if the biological community was severely altered (dominated by pollution-tolerant organisms, had very high or low biomass, or possessed other significant functional alterations) or habitat characteristics were severely impacted. Partial support was determined by biological metrics that indicated a degraded fish/macroinvertebrate/diatom community. Biological indications of a fair biotic index, increased biomass of filamentous green algae, reduction in relative abundance of sensitive species, or evidence of alterations in macroinvertebrate functional groups may warrant classification as a degraded community.

Fecal coliform bacteria data were used to indicate degree of support for primary contact recreation (or swimming) use. Primary contact recreation was not supported if the fecal coliform bacteria criterion was exceeded greater than 25 percent of the time based on two years of monthly data collected during the recreation season (May through October). Primary contact recreation was partially supported if the criterion was exceeded greater than 11 percent but less than 25 percent of the time. And, swimming use was fully supported if the criterion was not met in 10 percent or less of the measurements. In addition, streams or lakes with a pH below 6.0 units were listed as not supporting the swimming use.

Fish consumption is a category that, in conjunction with aquatic life use, assesses attainment of the fishable goal of the Clean Water Act. Assessment of the fishable goal was separated into these two categories in 1992 because a fish consumption advisory does not preclude attainment of the aquatic life use and vice versa. Separating fish consumption and aquatic life uses gives a clearer picture of actual water quality conditions. The following criteria were used to assess support for the fish consumption use:

- Fully Supporting: No fish advisories or bans in effect.
- Partially Supporting: "Restricted consumption" fish advisory or ban in effect for general population or a subpopulation that could be at potentially greater risk (e.g., pregnant women, children). Restricted consumption is defined as limits on the number of meals consumed per unit time for one or more fish species.
- Not Supporting: "No consumption" fish advisory or ban in effect for general population, or a subpopulation that could be at potentially greater risk, for one or more fish species; commercial fishing ban in effect.

Drinking Water Use Support was based on the Phase II/Phase V data collection program as required by the Safe Drinking Water Act. Results were compared to EPA's Maximum Contaminant Levels for a variety of pollutants. Although not a quantitative measurement of ambient water quality, this information highlights waters in which certain pollutants are high enough to exceed drinking water criteria even after conventional treatment by the drinking water plant. Lacking instream data, which historically has been scarce in Kentucky for drinking water constituents, EPA's 1996 305(b) report guidance recommends

using the finished water data for assessing drinking water use. As a result of assessing Phase II/Phase V drinking water data, all streams and rivers met full support criteria for drinking water use. Surveys of drinking water plant operators on lakes were also conducted in an effort to determine those lakes with taste and odor problems, which are generally the result of excessive algae concentrations in the raw water supply.

RECOMMENDED WATERS FOR TMDL DEVELOPMENT

An alphabetized index of all streams that fail to meet one or more designated uses and therefore scheduled for TMDL development are listed in Table 1. The index provides the priority ranking, watershed management unit, and drainage basin for all listed streams. In turn, this information can be used to more easily find and determine the impairment of a particular stream in Table 2, 3, and 4. A list of streams with ongoing TMDL development and implementation is provided in Table 2; ongoing TMDLs for lakes are presented in Table 5. Streams are further grouped according to First Priority (Table 3) and Second Priority (Table 4) ranking; first and second priority lakes are listed in Tables 6 and 7. Impaired streams are grouped within corresponding watershed management unit and appropriate drainage basin within each table. There are a few stream segments in which data indicates a negatively impacted biological community but no specific pollutant or cause has been identified. The pollutant of concern in this case is listed as "Cause Unknown." Lastly, there are some waters that were listed in the 1996 303(d) list that are not included on the 1998 303(d) List of Waters. An explanation for the removal of these waters is provided in Table 8.

SUMMARY

This list does not include impaired streams or lakes that have control strategies and remedial measures already underway or completed and which the DOW may have more recent water quality data indicating improvements and compliance with water quality standards and/or the expectation of compliance with standards prior to the next listing cycle. Rationale for de-listing waterbodies that have been included in previous 303(d) reports (particularly 1996 303(d) list) are provided in Table 8. Again, the first priority streams are those that do not support the aquatic life, fish consumption, drinking water, and/or swimming uses. Those waters that partially support uses are listed as second priority. Additional streams may be added to this list as supporting documentation and TMDL proposals are submitted to the KDOW.

Public health, public interest, sources of the problems, availability of resources to focus on a project, and practicality of implementing needed controls to solve the problems are also considered when choosing waters for TMDL development. Those waters listed as first priority are chosen for early TMDL development and will be addressed within the first five years of any particular watershed cycle. Resources and implementation actions will be focused toward waters which have severe water quality problems and have high levels of public interest to see these problems resolved regardless of watershed cycle. Additional TMDL studies will be conducted based upon comments submitted from both government agencies and public interest groups and where resources become available.

The 1998 303(d) List of Waters includes approximately 196 unique stream segments and 34 lakes that have water quality impairments. Of the 196 listed stream segments, this includes approximately 165 separate streams (some streams have more than one listed segment, e.g., the Ohio River). There are 104 stream segments and 6 lakes which do not support one or more uses (first priority), and 66 stream segments and 27 lakes which partially support uses (second priority). There are TMDLs in progress for 26 of the 195 listed stream segments and 2 lakes, which represents about 12 percent of the 1998 303(d)-listed waters. The 303(d) list includes more than 2,592 impaired stream miles: 992 first priority, 1,338 second priority, and 262 stream miles with TMDL projects in progress. Kentucky has about 49,100 miles of streams which are depicted on USGS 1:100,000 scale topographic maps (excluding the Mississippi River) of which approximately 9,861 miles were assessed for the 1998 report. The 1998 303(d)-listed stream miles (2,592) represent 26.2 percent of the assessed stream miles in the state. There are 24 causes or pollutants resulting in 303(d) listing for streams and 8 causes for listing of lakes. The most frequent cause of impairment to 303(d)-listed streams is fecal coliform bacteria contamination. Organic enrichment, pH, and siltation are the next most frequent causes of stream impairment. The primary pollutant to 303(d)-listed lakes is nutrients from agricultural nonpoint sources.

Table 1. Alphabetic Index of 303(d)-Listed Streams

Stream Name	Priority	Basin Management Unit	Basin	County
Allen Fork	Second Priority	Salt/Licking Unit	OHIO RIVER	BOONE CO
Allison Creek	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Bacon Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HART CO
Bailey Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Banklick Creek	First Priority	Salt/Licking Unit	LICKING RIVER	KENTON CO
Barren River	First Priority	Tradewater/Green Unit	GREEN RIVER	WARREN CO
Baughman Fork	First Priority	Kentucky Unit	KENTUCKY RIVER	FAYETTE CO
Bayou Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	OHIO RIVER	MC CRACKEN CO
Bayou de Chien	First Priority	Tennessee/Mississippi/Cumberland Unit	MISSISSIPPI RIVER	HICKMAN CO
Bear Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Beargrass Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Beech Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	MUHENBERG CO
Beech Fork	Second Priority	Salt/Licking Unit	SALT RIVER	NELSON CO
Beechy Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	TENNESSEE RIVER	CALLOWAY CO
Big Lily Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	RUSSELL CO
Big Sandy River	Second Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	LAWRENCE CO
Brier Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	MUHENBERG CO
Brooks Run	First Priority	Salt/Licking Unit	SALT RIVER	BULLITT CO
Brush Creek	First Priority	Salt/Licking Unit	OHIO RIVER	CAMPBELL CO
Brush Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	ROCKCASTLE CO
Buck Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	WHITLEY CO
Buckhorn Creek	Second Priority	Salt/Licking Unit	SALT RIVER	MARION CO
Bucks Branch	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	WHITLEY CO
Butchers Branch	First Priority	Tradewater/Green Unit	OHIO RIVER	HANCOCK CO
Cabin Creek	First Priority	Salt/Licking Unit	OHIO RIVER	MASON CO
Cane Branch	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Cane Creek	First Priority	Kentucky Unit	KENTUCKY RIVER	BREATHITT CO
Cane Run	First Priority	Kentucky Unit	KENTUCKY RIVER	FAYETTE CO
Cane Run	Second Priority	Tradewater/Green Unit	TRADEWATER RIVER	HOPKINS CO
Caney Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	MUHENBERG CO
Carr Fork	First Priority	Kentucky Unit	KENTUCKY RIVER	PERRY CO
Carr Fork	Second Priority	Kentucky Unit	KENTUCKY RIVER	PERRY CO
Catron Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Cedar Creek	Second Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Central Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	MISSISSIPPI RIVER	CARLISLE CO
Champion Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	TENNESSEE RIVER	MC CRACKEN CO
Clarks River	First Priority	Tennessee/Mississippi/Cumberland Unit	TENNESSEE RIVER	CALLOWAY CO
Clear Creek	First Priority	Tradewater/Green Unit	TRADEWATER RIVER	HOPKINS CO
Clover Fork	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Cloverlick Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Cloverlick Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Copper Creek	Second Priority	Kentucky Unit	KENTUCKY RIVER	LINCOLN CO
Copperas Fork	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Craborchard Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Craintown Branch	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Crooked Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	ROCKCASTLE CO
Crooked Creek	First Priority	Tradewater/Green Unit	OHIO RIVER	CRITTENDEN CO
Cumberland River	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Cumberland River	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Cypress Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	MC LEAN CO
Cypress Creek	Second Priority	Tradewater/Green Unit	GREEN RIVER	MUHENBERG CO

Table 1. Alphabetic Index of 303(d)-Listed Streams

Stream Name	Priority	Basin Management Unit	Basin	County
Daniels Creek	Second Priority	Tradewater/Green Unit	GREEN RIVER	BRECKINRIDGE CO
Dix River	First Priority	Kentucky Unit	KENTUCKY RIVER	GARRARD CO
Doty Creek	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Drakes Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Eagle Creek	Second Priority	Kentucky Unit	KENTUCKY RIVER	GALLATIN CO
Elijahs Creek	In Progress	Salt/Licking Unit	OHIO RIVER	BOONE CO
Elk Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Elkhorn Creek	Second Priority	Kentucky Unit	KENTUCKY RIVER	FRANKLIN CO
Fern Creek	First Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Flat Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Fleming Creek	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Four Mile Creek	First Priority	Salt/Licking Unit	OHIO RIVER	CAMPBELL CO
Goose Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Greasy Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Green River	First Priority	Tradewater/Green Unit	GREEN RIVER	HART CO
Green River	Second Priority	Tradewater/Green Unit	GREEN RIVER	MC LEAN CO
Gunpowder Creek	In Progress	Salt/Licking Unit	OHIO RIVER	BOONE CO
Gunpowder Creek	Second Priority	Salt/Licking Unit	OHIO RIVER	BOONE CO
Hinkston Creek	Second Priority	Salt/Licking Unit	LICKING RIVER	MONTGOMERY CO
Hite Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Island Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	TENNESSEE RIVER	MC CRACKEN CO
Jonathan Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	TENNESSEE RIVER	CALLOWAY CO
Kentucky River	Second Priority	Kentucky Unit	KENTUCKY RIVER	ESTILL CO
Kentucky River	Second Priority	Kentucky Unit	KENTUCKY RIVER	WOODFORD CO
Knoblick Creek	Second Priority	Tradewater/Green Unit	GREEN RIVER	WEBSTER CO
Knox Creek	Second Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	PIKE CO
Laurel Creek	First Priority	Kentucky Unit	KENTUCKY RIVER	CLAY CO
Left Fork Straight Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Levisa Fork	First Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	JOHNSON CO
Levisa Fork	First Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	LAWRENCE CO
Levisa Fork	First Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	PIKE CO
Lewis Creek	Second Priority	Tradewater/Green Unit	GREEN RIVER	OHIO CO
Lick Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HENDERSON CO
Licking River	First Priority	Salt/Licking Unit	LICKING RIVER	CAMPBELL CO
Licking River	First Priority	Salt/Licking Unit	LICKING RIVER	MAGOFFIN CO
Licking River	Second Priority	Salt/Licking Unit	LICKING RIVER	MAGOFFIN CO
Licking River	Second Priority	Salt/Licking Unit	LICKING RIVER	MORGAN CO
Little Bayou Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	OHIO RIVER	MC CRACKEN CO
Little Clear Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Little Goose Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Little Laurel River	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	LAUREL CO
Little Pitman Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	TAYLOR CO
Little River	First Priority	Tennessee/Mississippi/Cumberland Unit	LOWER CUMBERLAND	TRIGG CO
Little Sandy River	Second Priority	Big and Little Sandy/Tygarts Unit	LITTLE SANDY RIVER	GREENUP CO
Logan Run	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Long Falls Creek	Second Priority	Tradewater/Green Unit	GREEN RIVER	MC LEAN CO
Long Run	First Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Looney Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Lynn Camp Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	WHITLEY CO
Marsh Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Martins Fork	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO

Table 1. Alphabetic Index of 303(d)-Listed Streams

Stream Name	Priority	Basin Management Unit	Basin	County
Martins Fork	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Massac Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	OHIO RIVER	MC CRACKEN CO
Mayfield Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	MISSISSIPPI RIVER	CARLISLE CO
Mayfield Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	MISSISSIPPI RIVER	CARLISLE CO
Middle Fork Beargrass Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Middle Fork Kentucky River	Second Priority	Kentucky Unit	KENTUCKY RIVER	LEE CO
Mill Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Mill Creek	First Priority	Salt/Licking Unit	SALT RIVER	HARDIN CO
Mill Creek Branch	Second Priority	Salt/Licking Unit	SALT RIVER	HARDIN CO
Mill Creek Cutoff	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Muddy Fork	Second Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Mussin Branch	Second Priority	Salt/Licking Unit	SALT RIVER	MARION CO
Newcombe Creek	First Priority	Big and Little Sandy/Tygarts Unit	LITTLE SANDY RIVER	ELLIOTT CO
Nolin River	First Priority	Tradewater/Green Unit	GREEN RIVER	HARDIN CO
North Fork Panther Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	DAVISS CO
Obion Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	MISSISSIPPI RIVER	GRAVES CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	BOONE CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	BOYD CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	CARROLL CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	GALLATIN CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	HANCOCK CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	HENDERSON CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	JEFFERSON CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	LEWIS CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	LIVINGSTON CO
Ohio River	Second Priority	Ohio River	OHIO RIVER MAIN STEM	UNION CO
Otter Creek	First Priority	Salt/Licking Unit	OHIO RIVER	MEADE CO
Pennsylvania Run	First Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Pitman Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	PULASKI CO
Pleasant Run	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Pond Creek	Second Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Pond Creek	First Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Pond Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	MUHLENBERG CO
Pond River	Second Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
Poor Fork	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO
Puckett Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Red River	First Priority	Kentucky Unit	KENTUCKY RIVER	POWELL CO
Red River	Second Priority	Kentucky Unit	KENTUCKY RIVER	MENIFEE CO
Render Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	OHIO CO
Rhodes Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	DAVISS CO
Richland Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	KNOX CO
Richland Slough	First Priority	Tradewater/Green Unit	GREEN RIVER	HENDERSON CO
Roaring Paunch Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Rock Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Rolling Fork	Second Priority	Salt/Licking Unit	SALT RIVER	BULLITT CO
Ryans Creek	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	MC CREARY CO
Salt River	First Priority	Salt/Licking Unit	SALT RIVER	ANDERSON CO
Salt River	First Priority	Salt/Licking Unit	SALT RIVER	BULLITT CO
Sand Lick Fork	First Priority	Kentucky Unit	KENTUCKY RIVER	POWELL CO
Sleepy Run	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Slop Ditch	First Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO

Table 1. Alphabetic Index of 303(d)-Listed Streams

Stream Name	Priority	Basin Management Unit	Basin	County
South Elkhorn Creek	Second Priority	Kentucky Unit	KENTUCKY RIVER	SCOTT CO
South Fork Beargrass Creek	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
South Fork Licking River	Second Priority	Salt/Licking Unit	LICKING RIVER	PENDLETON CO
South Fork Panther Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	DAVIESS CO
South Fork Red River	First Priority	Kentucky Unit	KENTUCKY RIVER	POWELL CO
South Fork Russell Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	GREEN CO
Southern Ditch	Second Priority	Salt/Licking Unit	SALT RIVER	JEFFERSON CO
Spring Ditch	First Priority	Salt/Licking Unit	OHIO RIVER	JEFFERSON CO
Straight Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Sugar Creek	Second Priority	Tradewater/Green Unit	TRADEWATER RIVER	HOPKINS CO
Three Mile Creek	First Priority	Salt/Licking Unit	LICKING RIVER	CAMPBELL CO
Town Branch	First Priority	Kentucky Unit	KENTUCKY RIVER	FAYETTE CO
Town Branch	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Tradewater River	First Priority	Tradewater/Green Unit	TRADEWATER RIVER	UNION CO
Tradewater River	Second Priority	Tradewater/Green Unit	TRADEWATER RIVER	HOPKINS CO
Troublesome Creek	First Priority	Kentucky Unit	KENTUCKY RIVER	BREATHITT CO
Tug Fork	First Priority	Big and Little Sandy/Tygarts Unit	BIG SANDY RIVER	MARTIN CO
Tygarts Creek	Second Priority	Big and Little Sandy/Tygarts Unit	TYGARTS CREEK	GREENUP CO
UT of Clear Creek	First Priority	Tradewater/Green Unit	TRADEWATER RIVER	HOPKINS CO
UT of Elk Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
UT of Rolling Fork	Second Priority	Salt/Licking Unit	SALT RIVER	MARION CO
UT to Flat Creek	First Priority	Tradewater/Green Unit	GREEN RIVER	HOPKINS CO
West Hickman Creek	Second Priority	Kentucky Unit	KENTUCKY RIVER	JESSAMINE CO
Whitley Branch	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	LAUREL CO
Wildcat Branch	First Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	PULASKI CO
Wilson Run	In Progress	Salt/Licking Unit	LICKING RIVER	FLEMING CO
Wolf Run	First Priority	Kentucky Unit	KENTUCKY RIVER	FAYETTE CO
Woolper Creek	First Priority	Salt/Licking Unit	OHIO RIVER	BOONE CO
Yellow Creek	Second Priority	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	BELL CO
Yocum Creek	In Progress	Tennessee/Mississippi/Cumberland Unit	UPPER CUMBERLAND	HARLAN CO

Table 2. 303(d) List of Waters for TMDL Development
In Progress
Salt/Licking Unit

Basin: LICKING RIVER

Allison Creek FLEMING CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>4.7</u> Segment Length: <u>4.7</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> NUTRIENTS ORGANIC ENRICHMENT/LOW DO NOXIOUS AQ. PLANTS native PATHOGENS	
Craintown Branch FLEMING CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>3.5</u> Segment Length: <u>3.5</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> NUTRIENTS NOXIOUS AQ. PLANTS native PATHOGENS	
Dotv Creek FLEMING CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>4.0</u> Segment Length: <u>4.0</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO PATHOGENS	
Flemina Creek FLEMING CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>39.2</u> Segment Length: <u>39.2</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO NUTRIENTS PATHOGENS	
Loan Run FLEMING CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>2.3</u> Segment Length: <u>2.3</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO	

Table 2. 303(d) List of Waters for TMDL Development
In Progress
Salt/Licking Unit

Sleepy Run FLEMING CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.8</u>
			Segment Length:	<u>2.8</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Town Branch FLEMING CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>4.0</u>
			Segment Length:	<u>4.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Wilson Run FLEMING CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.1</u>
			Segment Length:	<u>5.1</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Basin: OHIO RIVER

Elijahs Creek BOONE CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.2</u>
			Segment Length:	<u>5.2</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
NONPRIORITY ORGANICS

Gunpowder Creek BOONE CO	Downstream Mile Point:	<u>15.7</u>	Upstream Mile Point:	<u>18.9</u>
			Segment Length:	<u>3.2</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
NONPRIORITY ORGANICS

Table 2. 303(d) List of Waters for TMDL Development
In Progress
Tennessee/Mississippi/Cumberland Unit

Basin: UPPER CUMBERLAND

Bailev Creek HARLAN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>2.5</u> Segment Length: <u>2.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Catron Creek HARLAN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>8.5</u> Segment Length: <u>8.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Clover Fork HARLAN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>34.5</u> Segment Length: <u>34.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Cloverlick Creek HARLAN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>5.0</u> Segment Length: <u>5.0</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Cumberland River HARLAN CO	Downstream Mile Point: <u>684.9</u>	Upstream Mile Point: <u>694.2</u> Segment Length: <u>9.3</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Cumberland River BELL CO	Downstream Mile Point: <u>650.6</u>	Upstream Mile Point: <u>654.5</u> Segment Length: <u>3.9</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	

Table 2. 303(d) List of Waters for TMDL Development
In Progress
Tennessee/Mississippi/Cumberland Unit

Greasy Creek BELL CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>11.4</u> Segment Length: <u>11.4</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Left Fork Straight Creek BELL CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>13.0</u> Segment Length: <u>13.0</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS pH SUSPENDED SOLIDS	
Looney Creek HARLAN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>5.5</u> Segment Length: <u>5.5</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Martins Fork HARLAN CO	BELL CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>7.1</u> Segment Length: <u>7.1</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Martins Fork HARLAN CO		Downstream Mile Point: <u>7.1</u>	Upstream Mile Point: <u>10.1</u> Segment Length: <u>3.0</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Poor Fork HARLAN CO	LETCHER CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>25.1</u> Segment Length: <u>25.1</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Puckett Creek BELL CO	HARLAN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>10.0</u> Segment Length: <u>10.0</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	

Table 2. 303(d) List of Waters for TMDL Development
In Progress
Tennessee/Mississippi/Cumberland Unit

Richland Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>19.6</u>
KNOX CO				Segment Length:	<u>19.6</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Straight Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>23.5</u>
BELL CO	HARLAN CO			Segment Length:	<u>23.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Yocum Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>6.5</u>
HARLAN CO				Segment Length:	<u>6.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Kentucky Unit

Basin: KENTUCKY RIVER

Bauchman Fork FAYETTE CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>1.1</u> Segment Length: <u>1.1</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO NUTRIENTS	
Cane Creek BREATHITT CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>9.5</u> Segment Length: <u>9.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Cane Run FAYETTE CO	Downstream Mile Point: <u>10.0</u>	Upstream Mile Point: <u>17.4</u> Segment Length: <u>7.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO PATHOGENS	
Carr Fork PERRY CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>8.9</u> Segment Length: <u>8.9</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Dix River GARRARD CO	Downstream Mile Point: <u>33.0</u>	Upstream Mile Point: <u>36.0</u> Segment Length: <u>3.0</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Laurel Creek CLAY CO	Downstream Mile Point: <u>2.5</u>	Upstream Mile Point: <u>5.4</u> Segment Length: <u>2.9</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> AMMONIA (UNIONIZED) NUTRIENTS SUSPENDED SOLIDS ORGANIC ENRICHMENT/LOW DO PATHOGENS	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Kentucky Unit

Red River POWELL CO	Downstream Mile Point: <u>9.5</u>	Upstream Mile Point: <u>41.1</u> Segment Length: <u>31.6</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Sand Lick Fork POWELL CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>5.0</u> Segment Length: <u>5.0</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SALINITY/TDS/CHLORIDES	
South Fork Red River POWELL CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>10.1</u> Segment Length: <u>10.1</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SALINITY/TDS/CHLORIDES	
Town Branch FAYETTE CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>11.3</u> Segment Length: <u>11.3</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS ORGANIC ENRICHMENT/LOW DO NUTRIENTS	
Troublesome Creek BREATHITT CO PERRY CO	Downstream Mile Point: <u>0.0</u> KNOTT CO	Upstream Mile Point: <u>49.5</u> Segment Length: <u>49.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Wolf Run FAYETTE CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>4.1</u> Segment Length: <u>4.1</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Basin: LICKING RIVER

Banklick Creek KENTON CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>19.0</u>
			Segment Length:	<u>19.0</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
NUTRIENTS
ORGANIC ENRICHMENT/LOW DO
HABITAT ALTER. (non-flow)
PATHOGENS

Lickina River CAMPBELL CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>4.6</u>
			Segment Length:	<u>4.6</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Lickina River MAGOFFIN CO	Downstream Mile Point:	<u>293.3</u>	Upstream Mile Point:	<u>301.1</u>
			Segment Length:	<u>7.8</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION

Three Mile Creek CAMPBELL CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>4.7</u>
			Segment Length:	<u>4.7</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
PATHOGENS
ORGANIC ENRICHMENT/LOW DO
NUTRIENTS

Basin: OHIO RIVER

Beargrass Creek JEFFERSON CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.6</u>
			Segment Length:	<u>1.6</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
METALS
ORGANIC ENRICHMENT/LOW DO

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Brush Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.6</u>
CAMPBELL CO				Segment Length:	<u>1.6</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		ORGANIC ENRICHMENT/LOW DO			
Cabin Creek		Downstream Mile Point:	<u>3.6</u>	Upstream Mile Point:	<u>11.3</u>
MASON CO	LEWIS CO			Segment Length:	<u>7.7</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		SILTATION			
		HABITAT ALTER. (non-flow)			
Four Mile Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>0.2</u>
CAMPBELL CO				Segment Length:	<u>0.2</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Four Mile Creek		Downstream Mile Point:	<u>8.4</u>	Upstream Mile Point:	<u>9.4</u>
CAMPBELL CO				Segment Length:	<u>1.0</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		NUTRIENTS			
		ORGANIC ENRICHMENT/LOW DO			
Goose Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>11.7</u>
JEFFERSON CO				Segment Length:	<u>11.7</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		ORGANIC ENRICHMENT/LOW DO			
SWIMMABLE		PATHOGENS			
Hite Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.5</u>
JEFFERSON CO	OLDHAM CO			Segment Length:	<u>5.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		UNKNOWN TOXICITY			

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Little Goose Creek JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>8.7</u> Segment Length: <u>8.7</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS ORGANIC ENRICHMENT/LOW DO	
Middle Fork Beargrass Creek JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>15.2</u> Segment Length: <u>15.2</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> METALS ORGANIC ENRICHMENT/LOW DO	
Mill Creek JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>9.7</u> Segment Length: <u>9.7</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS ORGANIC ENRICHMENT/LOW DO HABITAT ALTER. (non-flow) SILTATION	
Mill Creek Cutoff JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>6.5</u> Segment Length: <u>6.5</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Otter Creek MEADE CO	Downstream Mile Point: <u>6.0</u>	Upstream Mile Point: <u>10.7</u> Segment Length: <u>4.7</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
South Fork Beargrass Creek JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>14.6</u> Segment Length: <u>14.6</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS ORGANIC ENRICHMENT/LOW DO	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Sprina Ditch	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.7</u>
JEFFERSON CO			Segment Length:	<u>2.7</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Woolper Creek	Downstream Mile Point:	<u>11.5</u>	Upstream Mile Point:	<u>13.6</u>
BOONE CO			Segment Length:	<u>2.1</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
NUTRIENTS
HABITAT ALTER. (non-flow)
SUSPENDED SOLIDS
ORGANIC ENRICHMENT/LOW DO

Basin: SALT RIVER

Brooks Run	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>6.1</u>
BULLITT CO			Segment Length:	<u>6.1</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
PATHOGENS
ORGANIC ENRICHMENT/LOW DO

Fern Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>7.5</u>
JEFFERSON CO			Segment Length:	<u>7.5</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
AMMONIA (UNIONIZED)
PATHOGENS
ORGANIC ENRICHMENT/LOW DO
NUTRIENTS

Fern Creek	Downstream Mile Point:	<u>7.5</u>	Upstream Mile Point:	<u>12.8</u>
JEFFERSON CO			Segment Length:	<u>5.3</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
PATHOGENS
ORGANIC ENRICHMENT/LOW DO
NUTRIENTS

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Lona Run		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>9.5</u>
JEFFERSON CO				Segment Length:	<u>9.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Mill Creek		Downstream Mile Point:	<u>6.0</u>	Upstream Mile Point:	<u>7.0</u>
HARDIN CO				Segment Length:	<u>1.0</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		METALS			
Pennsylvania Run		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>3.1</u>
JEFFERSON CO	BULLITT CO			Segment Length:	<u>3.1</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		PATHOGENS			
SWIMMABLE		ORGANIC ENRICHMENT/LOW DO			
Pond Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>17.0</u>
JEFFERSON CO				Segment Length:	<u>17.0</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		METALS			
SWIMMABLE		ORGANIC ENRICHMENT/LOW DO			
		PATHOGENS			
Salt River		Downstream Mile Point:	<u>11.4</u>	Upstream Mile Point:	<u>25.2</u>
BULLITT CO				Segment Length:	<u>13.8</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Salt River		Downstream Mile Point:	<u>78.0</u>	Upstream Mile Point:	<u>88.5</u>
ANDERSON CO				Segment Length:	<u>10.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Salt/Licking Unit

Slop Ditch
JEFFERSON CO

Downstream Mile Point: 0.0 Upstream Mile Point: 3.5
Segment Length: 3.5

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
PATHOGENS
METALS
FLOW ALTERATIONS

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tennessee/Mississippi/Cumberland Unit

Basin: LOWER CUMBERLAND

Little River TRIGG CO	CHRISTIAN CO	Downstream Mile Point: <u>23.6</u>	Upstream Mile Point: <u>61.0</u> Segment Length: <u>37.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> NUTRIENTS SILTATION PATHOGENS	

Basin: MISSISSIPPI RIVER

Bavou de Chien HICKMAN CO	GRAVES CO	Downstream Mile Point: <u>14.0</u>	Upstream Mile Point: <u>25.9</u> Segment Length: <u>11.9</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	

Mavfield Creek CARLISLE CO		Downstream Mile Point: <u>8.2</u>	Upstream Mile Point: <u>13.5</u> Segment Length: <u>5.3</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> HABITAT ALTER. (non-flow) SILTATION PATHOGENS	

Basin: OHIO RIVER

Bavou Creek MC CRACKEN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>6.5</u> Segment Length: <u>6.5</u>
<u>Impaired Use</u> AQUATIC LIFE		<u>Pollutants of Concern</u> Mercury RADIATION THERMAL MODIFICATIONS pH METALS	

Table 3. 303(d) List of Waters for TMDL Development
First Priority

Tennessee/Mississippi/Cumberland Unit

Little Bavou Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>6.5</u>
MC CRACKEN CO			Segment Length:	<u>6.5</u>

Impaired Use

AQUATIC LIFE
FISH CONSUMPTION

Pollutants of Concern

PCBs
METALS
RADIATION

Massac Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>10.0</u>
MC CRACKEN CO			Segment Length:	<u>10.0</u>

Impaired Use

AQUATIC LIFE

Pollutants of Concern

ORGANIC ENRICHMENT/LOW DO
NUTRIENTS

Basin: TENNESSEE RIVER

Clarks River	Downstream Mile Point:	<u>48.4</u>	Upstream Mile Point:	<u>59.2</u>
CALLOWAY CO			Segment Length:	<u>10.8</u>

Impaired Use

AQUATIC LIFE
SWIMMABLE

Pollutants of Concern

ORGANIC ENRICHMENT/LOW DO
SILTATION
NUTRIENTS
PATHOGENS

Basin: UPPER CUMBERLAND

Bear Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>3.2</u>
MC CREARY CO			Segment Length:	<u>3.2</u>

Impaired Use

AQUATIC LIFE
SWIMMABLE

Pollutants of Concern

pH

Brush Creek	Downstream Mile Point:	<u>1.1</u>	Upstream Mile Point:	<u>7.5</u>
ROCKCASTLE CO			Segment Length:	<u>6.4</u>

Impaired Use

SWIMMABLE

Pollutants of Concern

PATHOGENS

Table 3. 303(d) List of Waters for TMDL Development
First Priority

Tennessee/Mississippi/Cumberland Unit

Buck Creek WHITLEY CO		Downstream Mile Point: <u>1.4</u>	Upstream Mile Point: <u>2.8</u> Segment Length: <u>1.4</u>
<u>Impaired Use</u> AQUATIC LIFE		<u>Pollutants of Concern</u> SILTATION HABITAT ALTER. (non-flow) TURBIDITY	
Bucks Branch WHITLEY CO	MC CREARY CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>2.3</u> Segment Length: <u>2.3</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> pH	
Cane Branch MC CREARY CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>2.0</u> Segment Length: <u>2.0</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> pH	
Cloverlick Creek HARLAN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>5.0</u> Segment Length: <u>5.0</u>
<u>Impaired Use</u> AQUATIC LIFE		<u>Pollutants of Concern</u> HABITAT ALTER. (non-flow) SUSPENDED SOLIDS	
Copperas Fork MC CREARY CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>3.8</u> Segment Length: <u>3.8</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> pH	
Little Laurel River LAUREL CO		Downstream Mile Point: <u>8.3</u>	Upstream Mile Point: <u>12.4</u> Segment Length: <u>4.1</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	

Table 3. 303(d) List of Waters for TMDL Development
First Priority

Tennessee/Mississippi/Cumberland Unit

Little Laurel River LAUREL CO	Downstream Mile Point: <u>12.4</u>	Upstream Mile Point: <u>14.6</u> Segment Length: <u>2.2</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> NUTRIENTS PATHOGENS ORGANIC ENRICHMENT/LOW DO	
Little Laurel River LAUREL CO	Downstream Mile Point: <u>14.6</u>	Upstream Mile Point: <u>22.8</u> Segment Length: <u>8.2</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Lynn Camp Creek WHITLEY CO KNOX CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>4.5</u> Segment Length: <u>4.5</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS OIL AND GREASE SUSPENDED SOLIDS HABITAT ALTER. (non-flow)	
Marsh Creek MC CREARY CO	Downstream Mile Point: <u>18.7</u>	Upstream Mile Point: <u>24.0</u> Segment Length: <u>5.3</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SILTATION HABITAT ALTER. (non-flow)	
Martins Fork HARLAN CO	Downstream Mile Point: <u>18.0</u>	Upstream Mile Point: <u>27.4</u> Segment Length: <u>9.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	
Roaring Paunch Creek MC CREARY CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>15.6</u> Segment Length: <u>15.6</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	

Table 3. 303(d) List of Waters for TMDL Development
First Priority

Tennessee/Mississippi/Cumberland Unit

Rock Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>4.1</u>
MC CREARY CO				Segment Length:	<u>4.1</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		pH			
SWIMMABLE					
Rvans Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.3</u>
MC CREARY CO	WHITLEY CO			Segment Length:	<u>5.3</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		pH			
SWIMMABLE		SUSPENDED SOLIDS			
Whitlev Branch		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.0</u>
LAUREL CO				Segment Length:	<u>1.0</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		PATHOGENS			
SWIMMABLE		CHLORINE			
Whitlev Branch		Downstream Mile Point:	<u>1.0</u>	Upstream Mile Point:	<u>2.5</u>
LAUREL CO				Segment Length:	<u>1.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Wildcat Branch		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.1</u>
PULASKI CO				Segment Length:	<u>2.1</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		pH			
SWIMMABLE					

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

Basin: GREEN RIVER

Bacon Creek HART CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>31.2</u> Segment Length: <u>31.2</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Barren River WARREN CO	Downstream Mile Point: <u>29.4</u>	Upstream Mile Point: <u>43.6</u> Segment Length: <u>14.2</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> METALS PATHOGENS	
Beech Creek MUHLENBERG CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>3.4</u> Segment Length: <u>3.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	
Brier Creek MUHLENBERG CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>4.7</u> Segment Length: <u>4.7</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	
Canev Creek MUHLENBERG CO	Downstream Mile Point: <u>1.3</u>	Upstream Mile Point: <u>5.5</u> Segment Length: <u>4.2</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Craborchard Creek HOPKINS CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>7.6</u> Segment Length: <u>7.6</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

Cypress Creek MC LEAN CO	MUHLENBERG CO	Downstream Mile Point: <u>25.0</u>	Upstream Mile Point: <u>33.3</u> Segment Length: <u>8.3</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> pH	
Drakes Creek HOPKINS CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>8.5</u> Segment Length: <u>8.5</u>
<u>Impaired Use</u> AQUATIC LIFE FISH CONSUMPTION SWIMMABLE		<u>Pollutants of Concern</u> PCBs pH	
Drakes Creek HOPKINS CO		Downstream Mile Point: <u>8.5</u>	Upstream Mile Point: <u>21.3</u> Segment Length: <u>12.8</u>
<u>Impaired Use</u> FISH CONSUMPTION		<u>Pollutants of Concern</u> PCBs	
Elk Creek HOPKINS CO		Downstream Mile Point: <u>7.8</u>	Upstream Mile Point: <u>10.9</u> Segment Length: <u>3.1</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Flat Creek HOPKINS CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>10.6</u> Segment Length: <u>10.6</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> pH	
Green River HART CO	EDMONSON CO GREEN CO	Downstream Mile Point: <u>183.5</u>	Upstream Mile Point: <u>250.2</u> Segment Length: <u>66.7</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

Lick Creek		Downstream Mile Point:	<u>4.9</u>	Upstream Mile Point:	<u>13.7</u>
HENDERSON CO				Segment Length:	<u>8.8</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		SILTATION			
Little Pitman Creek		Downstream Mile Point:	<u>5.9</u>	Upstream Mile Point:	<u>10.1</u>
TAYLOR CO	GREEN CO			Segment Length:	<u>4.2</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		METALS			
		NUTRIENTS			
Nolin River		Downstream Mile Point:	<u>44.0</u>	Upstream Mile Point:	<u>93.2</u>
HARDIN CO				Segment Length:	<u>49.2</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
North Fork Panther Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>12.7</u>
DAVISS CO				Segment Length:	<u>12.7</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		FLOW ALTERATIONS			
		HABITAT ALTER. (non-flow)			
Pleasant Run		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>7.9</u>
HOPKINS CO				Segment Length:	<u>7.9</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		pH			
SWIMMABLE					
Pond Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>9.4</u>
MUHLENBERG CO				Segment Length:	<u>9.4</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		SALINITY/TDS/CHLORIDES			

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

Pond Creek MUHLENBERG CO	Downstream Mile Point: <u>9.4</u>	Upstream Mile Point: <u>23.8</u> Segment Length: <u>14.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH HABITAT ALTER. (non-flow)	
Render Creek OHIO CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>3.3</u> Segment Length: <u>3.3</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	
Rhodes Creek DAVISS CO	Downstream Mile Point: <u>1.2</u>	Upstream Mile Point: <u>7.3</u> Segment Length: <u>6.1</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SILTATION HABITAT ALTER. (non-flow)	
Richland Slough HENDERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>6.2</u> Segment Length: <u>6.2</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SILTATION	
South Fork Panther Creek DAVISS CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>9.9</u> Segment Length: <u>9.9</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> FLOW ALTERATIONS HABITAT ALTER. (non-flow)	
South Fork Russell Creek GREEN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>0.6</u> Segment Length: <u>0.6</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> SALINITY/TDS/CHLORIDES	

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

UT of Elk Creek HOPKINS CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.0</u>
			Segment Length:	<u>1.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

UT to Flat Creek HOPKINS CO	Downstream Mile Point:	<u>3.1</u>	Upstream Mile Point:	<u>4.1</u>
			Segment Length:	<u>1.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Basin: OHIO RIVER

Butchers Branch HANCOCK CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.3</u>
			Segment Length:	<u>2.3</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
pH

Crooked Creek CRITTENDEN CO	Downstream Mile Point:	<u>22.3</u>	Upstream Mile Point:	<u>23.3</u>
			Segment Length:	<u>1.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Basin: TRADEWATER RIVER

Clear Creek HOPKINS CO	Downstream Mile Point:	<u>25.5</u>	Upstream Mile Point:	<u>26.5</u>
			Segment Length:	<u>1.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Tradewater River UNION CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>16.7</u>
			Segment Length:	<u>16.7</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Tradewater/Green Unit

UT of Clear Creek
HOPKINS CO

Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.2</u>
		Segment Length:	<u>2.2</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Table 3. 303(d) List of Waters for TMDL Development
First Priority
Big and Little Sandy/Tygarts Unit

Basin: BIG SANDY RIVER

Levisa Fork LAWRENCE CO		Downstream Mile Point:	<u>1.0</u>	Upstream Mile Point:	<u>38.9</u>
				Segment Length:	<u>37.9</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> METALS PATHOGENS			
Levisa Fork JOHNSON CO FLOYD CO		Downstream Mile Point:	<u>65.0</u>	Upstream Mile Point:	<u>97.3</u>
				Segment Length:	<u>32.3</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS			
Levisa Fork PIKE CO		Downstream Mile Point:	<u>116.2</u>	Upstream Mile Point:	<u>124.6</u>
				Segment Length:	<u>8.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS SILTATION			
Tua Fork MARTIN CO		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>10.2</u>
				Segment Length:	<u>10.2</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS			
Tua Fork MARTIN CO LAWRENCE CO		Downstream Mile Point:	<u>10.2</u>	Upstream Mile Point:	<u>41.6</u>
				Segment Length:	<u>31.4</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS SILTATION ORGANIC ENRICHMENT/LOW DO			

Table 3. 303(d) List of Waters for TMDL Development
First Priority

Big and Little Sandy/Tygarts Unit

Basin: LITTLE SANDY RIVER

Newcombe Creek
ELLIOTT CO

Downstream Mile Point: 0.0 Upstream Mile Point: 11.9
Segment Length: 11.9

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SALINITY/TDS/CHLORIDES

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Kentucky Unit

Basin: KENTUCKY RIVER

Carr Fork PERRY CO		Downstream Mile Point: <u>15.8</u>	Upstream Mile Point: <u>26.4</u> Segment Length: <u>10.6</u>
<u>Impaired Use</u> AQUATIC LIFE		<u>Pollutants of Concern</u> SILTATION	
Copper Creek LINCOLN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>11.8</u> Segment Length: <u>11.8</u>
<u>Impaired Use</u> AQUATIC LIFE		<u>Pollutants of Concern</u> SILTATION	
Eagle Creek GALLATIN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>38.8</u> Segment Length: <u>38.8</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE		<u>Pollutants of Concern</u> NUTRIENTS PATHOGENS	
Elkhorn Creek FRANKLIN CO		Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>17.8</u> Segment Length: <u>17.8</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Kentucky River ESTILL CO	MADISON CO	Downstream Mile Point: <u>190.8</u>	Upstream Mile Point: <u>201.0</u> Segment Length: <u>10.2</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	
Kentucky River WOODFORD CO	MERCER CO	Downstream Mile Point: <u>118.2</u> JESSAMINE CO	Upstream Mile Point: <u>139.0</u> Segment Length: <u>20.8</u>
<u>Impaired Use</u> SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS	

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Kentucky Unit

Middle Fork Kentucky River
LEE CO

Downstream Mile Point: 71.9 Upstream Mile Point: 74.8
Segment Length: 2.9

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
ORGANIC ENRICHMENT/LOW DO
PATHOGENS
SUSPENDED SOLIDS

Red River
MENIFEE CO

Downstream Mile Point: 59.9 Upstream Mile Point: 94.2
Segment Length: 34.3

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION
NUTRIENTS

South Elkhorn Creek
SCOTT CO

Downstream Mile Point: 16.4 Upstream Mile Point: 34.0
Segment Length: 17.6

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
NUTRIENTS
PATHOGENS
ORGANIC ENRICHMENT/LOW DO
PESTICIDES

West Hickman Creek
JESSAMINE CO FAYETTE CO

Downstream Mile Point: 3.6 Upstream Mile Point: 8.6
Segment Length: 5.0

Impaired Use
AQUATIC LIFE

Pollutants of Concern
HABITAT ALTER. (non-flow)
SILTATION

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Salt/Licking Unit

Basin: LICKING RIVER

Hinkston Creek MONTGOMERY CO	Downstream Mile Point: <u>63.0</u>	Upstream Mile Point: <u>65.9</u>	Segment Length: <u>2.9</u>
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Impaired Use
AQUATIC LIFE

Pollutants of Concern
NUTRIENTS
UNKNOWN TOXICITY

Lickina River MORGAN CO	Downstream Mile Point: <u>226.4</u>	Upstream Mile Point: <u>239.3</u>	Segment Length: <u>12.9</u>
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Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Lickina River MAGOFFIN CO	Downstream Mile Point: <u>269.5</u>	Upstream Mile Point: <u>293.3</u>	Segment Length: <u>23.8</u>
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Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION

Lickina River MAGOFFIN CO	Downstream Mile Point: <u>263.1</u>	Upstream Mile Point: <u>269.5</u>	Segment Length: <u>6.4</u>
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Impaired Use
AQUATIC LIFE

Pollutants of Concern
ORGANIC ENRICHMENT/LOW DO

South Fork Lickina River PENDLETON CO HARRISON CO	Downstream Mile Point: <u>11.5</u>	Upstream Mile Point: <u>27.1</u>	Segment Length: <u>15.6</u>
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Impaired Use
AQUATIC LIFE

Pollutants of Concern
NUTRIENTS
SILTATION

Basin: OHIO RIVER

Allen Fork BOONE CO	Downstream Mile Point: <u>2.0</u>	Upstream Mile Point: <u>4.6</u>	Segment Length: <u>2.6</u>
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Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION
HABITAT ALTER. (non-flow)
NUTRIENTS

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Salt/Licking Unit

Gunpowder Creek	Downstream Mile Point:	<u>18.9</u>	Upstream Mile Point:	<u>21.6</u>
BOONE CO			Segment Length:	<u>2.7</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CAUSE UNKNOWN

Muddy Fork	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>6.9</u>
JEFFERSON CO			Segment Length:	<u>6.9</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Pond Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.5</u>
JEFFERSON CO	OLDHAM CO			Segment Length:	<u>1.5</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
NUTRIENTS
CHLORINE

Basin: SALT RIVER

Beech Fork		Downstream Mile Point:	<u>39.5</u>	Upstream Mile Point:	<u>49.7</u>
NELSON CO	WASHINGTON CO			Segment Length:	<u>10.2</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Buckhorn Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.3</u>
MARION CO			Segment Length:	<u>2.3</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
pH

Cedar Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>15.3</u>
JEFFERSON CO	BULLITT CO			Segment Length:	<u>15.3</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Salt/Licking Unit

Mill Creek Branch HARDIN CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>0.7</u> Segment Length: <u>0.7</u>
<u>Impaired Use</u> AQUATIC LIFE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO AMMONIA (UNIONIZED)	
Mussin Branch MARION CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>1.7</u> Segment Length: <u>1.7</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	
Rollina Fork BULLITT CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>20.1</u> Segment Length: <u>20.1</u>
<u>Impaired Use</u> SWIMMABLE	<u>Pollutants of Concern</u> PATHOGENS	
Southern Ditch JEFFERSON CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>5.5</u> Segment Length: <u>5.5</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> ORGANIC ENRICHMENT/LOW DO PATHOGENS	
UT of Rollina Fork MARION CO	Downstream Mile Point: <u>0.0</u>	Upstream Mile Point: <u>0.6</u> Segment Length: <u>0.6</u>
<u>Impaired Use</u> AQUATIC LIFE SWIMMABLE	<u>Pollutants of Concern</u> pH	

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Tennessee/Mississippi/Cumberland Unit

Basin: MISSISSIPPI RIVER

Central Creek CARLISLE CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>0.4</u>
			Segment Length:	<u>0.4</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CHLORINE

Mavfield Creek CARLISLE CO	BALLARD CO	Downstream Mile Point:	<u>13.5</u>	Upstream Mile Point:	<u>40.8</u>
		MC CRACKEN CO		Segment Length:	<u>27.3</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
HABITAT ALTER. (non-flow)
SILTATION

Obion Creek GRAVES CO	Downstream Mile Point:	<u>46.7</u>	Upstream Mile Point:	<u>56.0</u>
			Segment Length:	<u>9.3</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION

Basin: TENNESSEE RIVER

Beechv Creek CALLOWAY CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>2.9</u>
			Segment Length:	<u>2.9</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CAUSE UNKNOWN

Champion Creek MC CRACKEN CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>1.5</u>
			Segment Length:	<u>1.5</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CAUSE UNKNOWN

Island Creek MC CRACKEN CO	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>10.3</u>
			Segment Length:	<u>10.3</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CAUSE UNKNOWN

Table 4. 303(d) List of Waters for TMDL Development
Second Priority

Tennessee/Mississippi/Cumberland Unit

Jonathan Creek		Downstream Mile Point:	<u>6.2</u>	Upstream Mile Point:	<u>18.0</u>
CALLOWAY CO	MARSHALL CO			Segment Length:	<u>11.8</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
CAUSE UNKNOWN

Basin: UPPER CUMBERLAND

Bia Lilv Creek		Downstream Mile Point:	<u>4.7</u>	Upstream Mile Point:	<u>9.1</u>
RUSSELL CO				Segment Length:	<u>4.4</u>

Impaired Use
AQUATIC LIFE
FISH CONSUMPTION

Pollutants of Concern
ORGANIC ENRICHMENT/LOW DO

Crooked Creek		Downstream Mile Point:	<u>1.0</u>	Upstream Mile Point:	<u>6.4</u>
ROCKCASTLE CO				Segment Length:	<u>5.4</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Little Clear Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>10.4</u>
BELL CO				Segment Length:	<u>10.4</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
pH
HABITAT ALTER. (non-flow)
SUSPENDED SOLIDS

Pitman Creek		Downstream Mile Point:	<u>4.0</u>	Upstream Mile Point:	<u>5.7</u>
PULASKI CO				Segment Length:	<u>1.7</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
UNKNOWN TOXICITY

Yellow Creek		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>18.5</u>
BELL CO				Segment Length:	<u>18.5</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
NUTRIENTS
SILTATION
HABITAT ALTER. (non-flow)

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Tradewater/Green Unit

Basin: GREEN RIVER

Cypress Creek MUHLENBERG CO		Downstream Mile Point:	<u>22.9</u>	Upstream Mile Point:	<u>25.0</u>
				Segment Length:	<u>2.1</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		pH			
SWIMMABLE					
Daniels Creek BRECKINRIDGE CO		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.7</u>
				Segment Length:	<u>5.7</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		HABITAT ALTER. (non-flow)			
Green River		Downstream Mile Point:	<u>71.3</u>	Upstream Mile Point:	<u>108.6</u>
MC LEAN CO	OHIO CO	BUTLER CO		Segment Length:	<u>37.3</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
SWIMMABLE		PATHOGENS			
Knoblick Creek WEBSTER CO		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>9.0</u>
				Segment Length:	<u>9.0</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		HABITAT ALTER. (non-flow)			
		SILTATION			
		ORGANIC ENRICHMENT/LOW DO			
Lewis Creek OHIO CO		Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>11.8</u>
				Segment Length:	<u>11.8</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		SILTATION			
Lona Falls Creek MC LEAN CO		Downstream Mile Point:	<u>2.0</u>	Upstream Mile Point:	<u>11.7</u>
				Segment Length:	<u>9.7</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
AQUATIC LIFE		HABITAT ALTER. (non-flow)			

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Tradewater/Green Unit

Pond River	Downstream Mile Point:	<u>1.0</u>	Upstream Mile Point:	<u>31.1</u>
HOPKINS CO			Segment Length:	<u>30.1</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION
HABITAT ALTER. (non-flow)

Basin: TRADEWATER RIVER

Cane Run	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>3.4</u>
HOPKINS CO			Segment Length:	<u>3.4</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
pH

Sugar Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>5.3</u>
HOPKINS CO			Segment Length:	<u>5.3</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
pH

Tradewater River		Downstream Mile Point:	<u>63.0</u>	Upstream Mile Point:	<u>92.2</u>
HOPKINS CO	CALDWELL CO			Segment Length:	<u>29.2</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Big and Little Sandy/Tygarts Unit

Basin: BIG SANDY RIVER

Big Sandy River	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>26.8</u>
LAWRENCE CO			Segment Length:	<u>26.8</u>

Impaired Use
AQUATIC LIFE

Pollutants of Concern
SILTATION
METALS

Knox Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>7.6</u>
PIKE CO			Segment Length:	<u>7.6</u>

Impaired Use
AQUATIC LIFE
SWIMMABLE

Pollutants of Concern
PATHOGENS
SILTATION

Basin: LITTLE SANDY RIVER

Little Sandy River	Downstream Mile Point:	<u>11.7</u>	Upstream Mile Point:	<u>37.7</u>
GREENUP CO			Segment Length:	<u>26.0</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Basin: TYGARTS CREEK

Tygarts Creek	Downstream Mile Point:	<u>0.0</u>	Upstream Mile Point:	<u>45.7</u>
GREENUP CO			Segment Length:	<u>45.7</u>

Impaired Use
SWIMMABLE

Pollutants of Concern
PATHOGENS

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Ohio River

Basin: OHIO RIVER MAIN STEM

Ohio River BOYD CO	GREENUP CO	Downstream Mile Point: <u>341.0</u>	Upstream Mile Point: <u>317.1</u> Segment Length: <u>23.9</u>
<u>Impaired Use</u> FISH CONSUMPTION SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS PCBs PRIORITY ORGANICS	
Ohio River BOONE CO		Downstream Mile Point: <u>510.0</u>	Upstream Mile Point: <u>491.1</u> Segment Length: <u>18.9</u>
<u>Impaired Use</u> FISH CONSUMPTION SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS PRIORITY ORGANICS PCBs	
Ohio River CARROLL CO	TRIMBLE CO	Downstream Mile Point: <u>606.8</u> OLDHAM CO	Upstream Mile Point: <u>545.8</u> Segment Length: <u>61.0</u>
<u>Impaired Use</u> AQUATIC LIFE FISH CONSUMPTION SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS PRIORITY ORGANICS PCBs CAUSE UNKNOWN	
Ohio River JEFFERSON CO		Downstream Mile Point: <u>629.9</u>	Upstream Mile Point: <u>606.8</u> Segment Length: <u>23.1</u>
<u>Impaired Use</u> FISH CONSUMPTION SWIMMABLE		<u>Pollutants of Concern</u> PATHOGENS PRIORITY ORGANICS PCBs	
Ohio River HENDERSON CO	UNION CO	Downstream Mile Point: <u>846.0</u>	Upstream Mile Point: <u>800.0</u> Segment Length: <u>46.0</u>
<u>Impaired Use</u> FISH CONSUMPTION		<u>Pollutants of Concern</u> PRIORITY ORGANICS PCBs	

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Ohio River

Ohio River		Downstream Mile Point:	<u>920.4</u>	Upstream Mile Point:	<u>918.5</u>
LIVINGSTON CO				Segment Length:	<u>1.9</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>436.2</u>	Upstream Mile Point:	<u>341.0</u>
LEWIS CO	GREENUP CO			Segment Length:	<u>95.2</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>776.1</u>	Upstream Mile Point:	<u>629.9</u>
HANCOCK CO	HARDIN CO			Segment Length:	<u>146.2</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>800.0</u>	Upstream Mile Point:	<u>776.1</u>
HENDERSON CO				Segment Length:	<u>23.9</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PATHOGENS			
SWIMMABLE		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>981.0</u>	Upstream Mile Point:	<u>920.4</u>
LIVINGSTON CO	MC CRACKEN CO			Segment Length:	<u>60.6</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PATHOGENS			
SWIMMABLE		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>510.0</u>	Upstream Mile Point:	<u>436.1</u>
BOONE CO	KENTON CO	CAMPBELL CO		Segment Length:	<u>73.9</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PATHOGENS			
SWIMMABLE		PRIORITY ORGANICS			
		PCBs			

Table 4. 303(d) List of Waters for TMDL Development
Second Priority
Ohio River

Ohio River		Downstream Mile Point:	<u>545.8</u>	Upstream Mile Point:	<u>510.0</u>
GALLATIN CO	BOONE CO			Segment Length:	<u>35.8</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PRIORITY ORGANICS			
		PCBs			
Ohio River		Downstream Mile Point:	<u>918.5</u>	Upstream Mile Point:	<u>846.0</u>
UNION CO				Segment Length:	<u>72.5</u>
<u>Impaired Use</u>		<u>Pollutants of Concern</u>			
FISH CONSUMPTION		PRIORITY ORGANICS			
		PCBs			

Table 5. 303(d) List of Lakes for TMDL Development
In Progress

Kentucky Unit

Basin: KENTUCKY RIVER

HERRINGTON LAKE

GARRARD

BOYLE

MERCER

Acres: 2940

Salt/Licking Unit

Basin: SALT RIVER

TAYLORSVILLE LAKE

SPENCER

Acres: 3050

Impaired Use

AQUATIC LIFE SUPPORT

Pollutants of Concern

NUTRIENTS

Table 6. 303(d) List of Lakes for TMDL Development
First Priority

Salt/Licking Unit

Basin: OHIO RIVER

REFORMATORY LAKE

Acres: 54

OLDHAM

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Basin: SALT RIVER

SYMPSON LAKE

Acres: 184

NELSON

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

NUTRIENTS

Tenn/Miss/Cumb Unit

Basin: UPPER CUMBERLAND RIVER

CORBIN CITY RESERVOIR

Acres: 139

LAUREL

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

NUTRIENTS

Tradewater/Green Unit

Basin: GREEN RIVER

BRIGGS LAKE

Acres: 18

LOGAN

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Table 6. 303(d) List of Lakes for TMDL Development
First Priority

METCALFE COUNTY LAKE

Acres: 22

METCALFE

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Basin: TRADEWATER RIVER

LOCH MARY LAKE

Acres: 135

HOPKINS

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

METALS

OTHER INORGANICS

(noncarbonate hardness)

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

Kentucky Unit

Basin: KENTUCKY RIVER

BUCKHORN LAKE

Acres: 1230

PERRY

Impaired Use

Pollutants of Concern

SECONDARY CONTACT REC

SUSPENDED SOLIDS

CARR FORK LAKE

Acres: 710

KNOTT

Impaired Use

Pollutants of Concern

SECONDARY CONTACT REC

SUSPENDED SOLIDS

STANFORD RESERVOIR

Acres: 43

LINCOLN

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

NUTRIENTS

WILGREEN LAKE

Acres: 169

MADISON

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

SECONDARY CONTACT REC

Salt/Licking Unit

Basin: LICKING RIVER

KINCAID LAKE

Acres: 183

PENDLETON

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

SAND LICK CREEK LAKE

Acres: 74

FLEMING

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

SHALLOW LAKE BASIN

SECONDARY CONTACT REC

NUTRIENTS

Basin: OHIO RIVER

JERICHO LAKE

Acres: 137

HENRY

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Basin: SALT RIVER

GUIST CREEK LAKE

Acres: 317

SHELBY

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

DRINKING WATER SUPPLY

METALS

LAKE MCNEELY

Acres: 51

JEFFERSON

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

LAKE SHELBY

Acres: 17

SHELBY

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

MARION COUNTY SPORTMAN
MARION

Acres: 21

Impaired Use

SECONDARY CONTACT REC

Pollutants of Concern

NUTRIENTS

Tenn/Miss/Cumb Unit

Basin: LOWER CUMBERLAND RIVER

HONKER LAKE
TRIGG

Acres: 190

Impaired Use

AQUATIC LIFE SUPPORT

Pollutants of Concern

NUTRIENTS

Basin: UPPER CUMBERLAND RIVER

CRANKS CREEK LAKE
HARLAN

Acres: 219

Impaired Use

AQUATIC LIFE SUPPORT

SWIMMABLE

SECONDARY CONTACT REC

Pollutants of Concern

pH

WOOD CREEK LAKE
LAUREL

Acres: 672

Impaired Use

DRINKING WATER SUPPLY

Pollutants of Concern

NUTRIENTS

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

Tradewater/Green Unit

Basin: GREEN RIVER

CAMPBELLSVILLE CITY LAKE

Acres: 63

TAYLOR

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

SECONDARY CONTACT REC

SHALLOW LAKE BASIN

CANEYVILLE RESERVOIR

Acres: 75

GRAYSON

Impaired Use

Pollutants of Concern

SECONDARY CONTACT REC

NUTRIENTS

DRINKING WATER SUPPLY

SHALLOW LAKE BASIN

GRAPEVINE LAKE

Acres: 50

HOPKINS

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

NUTRIENTS

GREEN RIVER LAKE

Acres: 8210

TAYLOR

ADAIR

Impaired Use

Pollutants of Concern

FISH CONSUMPTION

PRIORITY ORGANICS

(PCBs)

LAKE WASHBURN

Acres: 26

OHIO

Impaired Use

Pollutants of Concern

AQUATIC LIFE SUPPORT

NUTRIENTS

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

LUZERNE LAKE		Acres: 55
MUHLENBERG		
Impaired Use	Pollutants of Concern	
DRINKING WATER SUPPLY	NUTRIENTS	
ROUGH RIVER LAKE		Acres: 5100
BRECKINRIDGE	GRAYSON	
Impaired Use	Pollutants of Concern	
DRINKING WATER SUPPLY	NUTRIENTS	
DRINKING WATER SUPPLY		
SALEM LAKE		Acres: 99
LARUE		
Impaired Use	Pollutants of Concern	
SECONDARY CONTACT REC	SHALLOW LAKE BASIN	
SPA LAKE		Acres: 240
LOGAN		
Impaired Use	Pollutants of Concern	
AQUATIC LIFE SUPPORT	NUTRIENTS	
SECONDARY CONTACT REC	SHALLOW LAKE BASIN	
Basin: <u>OHIO RIVER</u>		
LAKE GEORGE		Acres: 53
CRITTENDEN		
Impaired Use	Pollutants of Concern	
AQUATIC LIFE SUPPORT	NUTRIENTS	
SCENIC LAKE		Acres: 18
HENDERSON		
Impaired Use	Pollutants of Concern	
AQUATIC LIFE SUPPORT	NUTRIENTS	

Table 7. 303(d) List of Lakes for TMDL Development
Second Priority

Basin: TRADEWATER RIVER

LAKE PEWEE

Acres: 360

HOPKINS

Impaired Use

Pollutants of Concern

DRINKING WATER SUPPLY

NUTRIENTS

Big and Little Sandy/Tygarts Unit

Basin: BIG SANDY RIVER

DEWEY LAKE

Acres: 1100

FLOYD

Impaired Use

Pollutants of Concern

SECONDARY CONTACT REC

SUSPENDED SOLIDS

Table 8. Rationale for De-Listing of Some 1996 Waters

Below are reasons why several waters listed in the 1996 303(d) report are not listed in the 1998 303(d) report. They appear in the order found in the 1996 303(d) report.

Levisa Fork River mile (RM) 116.2 - 124.1 should not have been included in the 1996 list because it is actually Fishtrap Lake.

Nelson Creek Assessed wrong in 1996. 1978 data did not show pH problem. We tried to assess it in 1997 but it was inaccessible. Called it unassessed for 1998.

Southards Creek Sampling in 1997 found pH no longer a problem. Creek now backed up by beaver dam so biological sampling was not possible. Called it unassessed for 1998.

Little Eagle Creek DMRs from Mallard Point STP were reason for 1996 listing. It has cleaned up since 1996 reporting period and recent DMRs reflect improved conditions. While source of previous listing is no longer a problem, there are no instream data to determine if stream meets or does not meet uses, so called unassessed for 1998.

North Fork Licking River Most recent monitoring data indicated full support for swimming from RM 0 - 31.8

Long Creek City of Arlington DMRs were cause of 1996 listing. Recent DMRs and discussions with field inspectors reveal it is no longer a problem.

Truman Creek City of Bardwell was cause of problems in 1996 listing. Recent DMRs and discussions with field inspectors reveal that operator problems have been solved and it is no longer a problem.

West Fork Mayfield Creek DMRs were problem previously but recent DMRs did not reveal a problem.

Bayou Creek Recent sampling of effluents and fish tissue shows PCBs not exceeding standards in most recent reporting period

Dry Creek City of Warsaw was reason for listing in 1996. Now under AO and will get new treatment plant with pipe directly to main stem of Ohio River. Should not be problem in two years.

Perkins Creek Faulty lift station in Paducah was source of problem. It has been replaced since 1996.

West Fork Massac Creek Recent monitoring indicated full support of aquatic life use, and a new lagoon has solved problem at a small sewage treatment plant.

Fishpool Creek Recent data from Louisville Metropolitan Sewer District/USGS did not exceed WQS.

Mauzy Lake Recent monitoring in 1996-97 showed full support of designated uses.

Green River The segment 71.3 - 108.6 listed for aquatic life use in 1996 was a mistake.

Pond River This water in Hopkins County was mis-labeled in 1998 draft as Pond Creek. It is still listed as not meeting aquatic life use in 1998 draft, but for siltation and habitat, not pH. The latter was not a problem at the ambient station in the most recent reporting period.

Kentucky River The segment 64.5 - 158.1 met swimming use based on most recent monitoring data.

Middle Fork Kentucky River The segment 0 - 43 met swimming use based on most recent monitoring data.

South Fork Kentucky River The segment 11.5 - 45 met swimming use based on most recent monitoring data.

Licking River The segment 71.6 - 106.8 met swimming use based on most recent monitoring data. The segment 237-244 no longer has a dissolved solids problem based on most recent monitoring data.

South Fork Licking River The segment 11.5 - 27.1 met swimming use based on most recent monitoring data.

Elk Fork City of Elkton is no longer causing problems, according to DMRs and discussions with field inspectors.

Bayou de Chien Most recent monitoring data did not indicate any pH problems. Swimming use was still not met.

Kinniconick Creek The segment 0 - 24.5 met swimming use based on most recent monitoring data.

Cane Run An intensive biological survey in 1996 indicated full support of aquatic life use.

Clarks River Mileage in 1996 report was carried too far for where sample was taken. Instead of 37.7 - 59.2, the 1998 report lists partial support for aquatic life use from 48.4 - 59.2.

Rockcastle River The segment 8.5 - 41.3 met swimming use based on most recent recent monitoring data.

Beshear Lake Most recent monitoring in 1996-97 showed full support of designated uses.

APPENDIX A

Press Release: Public Comment Period for Draft Kentucky 303(d) List of Waters

**News
from the
Natural Resources and
Environmental Protection Cabinet**
James E. Bickford, Secretary

Division of Water
14 Reilly Road
Frankfort, Ky. 40601
502-564-3410
Contact: Tom VanArsdall
(502) 564-3410

DRAFT LIST OF IMPAIRED STREAMS IN KENTUCKY IS RELEASED

FRANKFORT, KY. (March 11, 1998) -- A section of the Clean Water Act requires each state to periodically identify specific waters where water quality problems exist. In addition, the state is also required to prioritize the list of impaired waters, to calculate an allowable amount of pollutants for those waters (the total maximum daily load, or TMDL), and to devise alternative implementation plans to remedy the impairment.

In accordance with this requirement, the Kentucky Division of Water (DOW) has released a draft of the *1998 303(d) List of Waters for Kentucky* for public comment. Along with the list, the document contains a schedule for TMDL development.

The U.S. Environmental Protection Agency requests that the state's TMDLs for all 1998-listed waters be completed within the next 8-13 years. Kentucky's schedule is closely integrated with the Watershed Management Framework. Following this outline, TMDL development for 1998-listed waters is slated for completion in 2011. The highest priority waters are targeted for TMDL development early in the schedule. Currently, TMDLs for Elijahs and Gunpowder creeks are nearing completion; and many others, such as Fleming Creek and the upper Cumberland River, are in progress.

The TMDL process involves identification of specific pollutants and sources causing water quality impairment and determining the pollutant load the waterbody can receive and still sustain water quality uses. Pollution problems may lead to restricted uses of the state's waters, such as fish consumption advisories, swimming advisories, or threats of harm to aquatic life.

The draft 1998 303(d) List of Waters for Kentucky is available on the World Wide Web at
[/dow/303d98.htm](http://dow/303d98.htm)

Copies may also be requested from the Division of Water, 14 Reilly Road, Frankfort, KY 40601 (Atten: Dru Hawkins). Or telephone (502) 564-3410 to ask for a copy. Comments on the list or TMDL schedule should be sent to Tom VanArsdall at the above address or e-mail him at vanarsdall@nrdep.nr.state.ky.us. Comments are due by Friday, March 27.

APPENDIX B

Response to Comments

COMMENT SUMMARY	RESPONSE
<p>Kentucky Waterways Alliance</p> <p>1) "The State Must List All Impaired and Threatened Waters." ... "Thus it is not acceptable for the state not to list, for example, threatened waters or waters that have been identified as impaired by data other than chemical water quality samples indicating exceedences of numerical standards. Similarly, the state must list those waterbodies which can reasonably be expected to fail to meet WQS in the future due to, for example, a planned housing or industrial development or a new Swine operation.</p> <p>2) "The State Must Use All Existing Data and Actively Solicit Public Input."</p> <p>3) We request that you provide us as soon as possible with any draft list that the State has prepared in preparation for the April 1, 1998 submittal deadline.</p> <p>4) We further ask that you inform us of any public meeting or hearings to solicit public input. If no public meetings have been scheduled we ask that one be arranged.</p>	<p>1) A variety of data and information other than chemical water quality samples were used in determining use support for 303(d) listing. Biological sampling such as fish and macroinvertebrate community surveys were used in assessing waters, particularly for aquatic life use support.</p> <p>It is not the expectation of the KDOW that any waterbodies designated as threatened in the 1996 305(b) report would fail to support uses within the next two year listing cycle. Additionally, the KDOW does not consider a waterbody threatened by the construction of a new housing or industrial development or a new Swine operation. Appropriate regulations and/or restrictions are in place or in development to maintain use support within these waterbodies.</p> <p>2) Please refer to the following two sections of the report for a summary of how data were gathered and particular data sources:</p> <p>Methods of Assessing Use Support for 1998 303(d) Report; Monitoring Programs. All available data were used in use assessments. KDOW actively solicited public input for the 1998 303(d) List of Waters.</p> <p>3) A draft of the 1998 303(d) List of Waters was provided to Kentucky Waterways Alliance as well as posted on our Internet web site as soon as it was available.</p> <p>4) No public meetings were scheduled for public input for the 303(d) list. Ample opportunity for public input was provided through the public comment period on the 1998 303(d) draft list. The KDOW will give a presentation at the May scheduled meeting of the Kentucky Waterways Alliance as requested to describe the 303(d) and TMDL process.</p>

5) Please place us on the mailing list which you are required to maintain.

6) We hereby request a copy of the State's most recent 305(b) report.

7) The list must include waters impaired by all sources and other information.

8) Waters impaired or threatened primarily or solely by runoff sources must be listed.

9) The list must identify the specific pollutants causing the impairment and source of the pollutant.

10) Waters that are likely to be impaired within the next two years must be listed.

11) All sources of data such as any use impairments and any water quality problems identified by any person must be used in developing the list.

12) The list must accurately identify the waterbody segment through a GIS system or other equally precise means.

5) Kentucky Waterways Alliance is already included on a KDOW maintained 303(d) and TMDL mailing list.

6) Kentucky Waterways Alliance was previously provided a copy of the most recent 305(b) report. The 1996 305(b) report is the most recent available.

7 and 8) All available data were used in assessing use support. All waters that partially supported or failed to support uses and are not expected to improve to meet compliance within the next two years are included in this 303(d) list. Waterbodies impaired by point, nonpoint, and a combination of sources are included.

9) The specific pollutants causing impairment are indicated in appropriate tables. A description of the methodology used to develop the list and data sources is provided in the Methods of Assessing Use Support for 1998 303(d) Report section of the list.

10) The department does not have the means to predict waters that are likely not to meet uses in the next two years. It strongly believes that its regulations, if properly adhered to, are sufficient to ensure support of designated uses.

11) The list of impaired streams and lakes for TMDL was derived primarily by reviewing all known and readily available water quality and biological data that could be found for the state's waters. The KDOW actively solicited water quality and biological data collected or reported by local, state, and federal agencies, as well as private organizations and academic institutions. Streams for which there were monitored water quality data or additional knowledge, such as pertinent evaluated data, are included in this assessment. Streams with only anecdotal information based on informal surveys or comments are not included in this list.

12) For the purposes of this report, streams were identified by name, county, and mile points impaired. This type of information is generally more helpful to members of the public. The KDOW is in the process of geographically

<p>13) The state must fully include the public in the listing process.</p>	<p>referencing all 305(b) waterbodies with a GIS system. While it will not be available for the final 1998 303(d) list, it will be made available on our Internet web site when completed.</p> <p>13) A 30-day comment period was allowed for public input.</p>
<p>Via email:</p> <p>Sent: Friday, April 10, 1998 2:29 PM</p> <p>To: VanArsdall, Tom (NREPC, DEP)</p> <p>Subject: 303(d) list of streams</p> <p>Kentucky Coal Association</p> <p>1) This proposal is deficient in regards to its application to actual KPDES permits. What appears in this proposal is simply a list of streams and stream segments that do not meet water quality uses.</p> <p>2) The list of impaired waters did not contain any of the supporting documentation that justified the inclusion of the particular water in the targeted lists. There is no ability to effectively comment on the various listed water bodies without having access to the data used by the Division of Water to justify the inclusion of that particular water body in the 303(d)-listed waters.</p> <p>3) Internet review of the Division of Water's TMDL information, this data was not available, nor was there any reference to where this data could be obtained.</p> <p>4) It is also a concern to the Kentucky Coal Association on how the Division of Water will allocate pollutant load from both point and nonpoint sources for discharges in the watersheds of 303(d)-listed streams.</p> <p>I would appreciate your response to our concerns so that we can have a better understanding of the process being undertaken with this TMDL process. If this process will impact new and existing coal mines, then we need to understand exactly how the TMDL process will work in 303(d)-listed streams.</p>	<p>1) The application of specific TMDLs to KPDES permits is beyond the scope of this report. The purpose of the 303(d) List of Waters is to list and prioritize the impaired waters for TMDL development.</p> <p>2) Inclusion of all referenced data and documentation is beyond the scope of this report. Please refer to sections Methods of Assessing Use Support for 1998 303(d) Report and Monitoring Programs for a description of data sources.</p> <p>3) The data used in preparing this report are available at and can be requested from Tom VanArsdall, Division of Water, 14 Reilly Rd. Frankfort, KY 40601. A statement indicating where data can be obtained has been added to the text of the report.</p> <p>4) It is beyond the scope of this report to determine the allocation of pollutant loads for 303(d)-listed streams. Point and nonpoint source load allocations will be determined within specific TMDL reports. TMDLs are specific to a listed waterbody segment and pollutant.</p> <p>It is not anticipated that any changes would be made to KPDES coal mining permits. Compliance with those permit conditions should be sufficient to protect existing uses.</p>

<p>Via email from Marc Hult:</p> <p>Sent: Friday, April 10, 1998 11:04 PM</p> <p>To: VanArsdall, Tom (NREPC, DEP)</p> <p>Subject: Comments on Draft 1998 303(d) List</p> <p>The entry for the Licking River from miles 0.0 to 4.6 (Table 2 -- First Priority, page 4) includes the POC "pathogens" but not "nutrients" and "organic enrichment/low DO". I question whether these POC's should be designated as anything lower than "First Priority" because in reviewing criteria used for designation, it seems likely that the reach does have excess nutrients and organic enrichment. Perhaps, like the other apparent typographical errors for the entry (the extraneous words "ROWAN CO" and "MORGAN CO") the omission of these POC's was in error.</p>	<p>Monitoring by ORSANCO at river mile 4.5 did not indicate any dissolved oxygen problems and there was no biological data to list the segment as not supporting aquatic life use because of organic enrichment or excessive nutrients.</p> <p>The counties will be corrected.</p>
<p>Via email from Chris Hellman:</p> <p>Sent: Thursday, April 02, 1998 4:56 PM</p> <p>To: VanArsdall, Tom (NREPC, DEP)</p> <p>Subject: water quality in Elkhorn Creek</p> <p>As an avid kayaker and paddler of the Elkhorn, I was a bit dismayed to find this river listed as a second priority on your project list. Many of my friends in the Bluegrass Wildwater Association also paddle this river on a regular basis and we would like to maintain a high priority to keeping it in an enjoyable and safe condition.</p> <p>Can we contribute by joining the Kentucky River Watershed Watch?</p>	<p>The popularity of Elkhorn Creek has been a factor in its priority ranking for TMDL development. Public comments and extent of public use are included in ranking TMDLs for completion and implementation.</p> <p>The Kentucky River Watershed Watch is supported by the Kentucky River Authority. Please contact them about participation.</p>
<p>Via email from Barry Grimes:</p> <p>Sent: Thursday, April 02, 1998 11:35 AM</p> <p>To: VanArsdall, Tom (NREPC, DEP)</p> <p>Subject: Whitewater Streams need inclusion</p> <p>American Whitewater and Bluegrass Wildwater</p>	

<p>Association (BWA)</p> <p>1) I have looked at the proposed listing and saw that one of the most heavily used recreational whitewater streams, Elkhorn Creek, is included among the priority streams. While I'm not excited that the Elkhorn is considered impaired, I am satisfied that it will be assessed, monitored and a plan of action initiated.</p> <p>2) However, there were several other streams that are frequently paddled by recreational whitewater boaters which were not included. They are: Boone Creek of Fayette County, Muddy Creek, Tates Creek, Silver Creek, Otter Creek (East, West and Main Prongs) all of Madison County, Glenss Creek of Woodford, County, and Benson Creek of Franklin, County.</p> <p>3) I would like to request that there be a more concerted effort expended on enforcement actions, due to the primary contact of paddlers on all of the above waterways, including the Prongs of Otter Creek in Madison County. That all of these streams be included in the proposed "high priority" listing of Kentucky waters whose quality is impaired, and there be actions prioritized to restore these streams to suitable recreational use.</p>	<p>1) There is data available that indicates that a portion of Elkhorn Creek is partially impaired for support of swimming use. A TMDL for Elkhorn Creek and first priority tributaries Town Branch and Cane Run is given a high priority in this report. This TMDL is slated for completion within the next two years. High public use and concern of Elkhorn Creek were a factor in its high priority for TMDL development.</p> <p>2) According to available data these streams fully supported uses or there was no available data and therefore they were not included in the 1998 303(d) list.</p> <p>3) These waterbodies are not listed as impaired, therefore will not be ranked as high priority for TMDL development. The popularity of these streams to kayakers and canoers is noted.</p>
<p>Kentucky Natural Resources and Environmental Protection Cabinet,</p> <p>Division of Conservation</p> <p>1) Call for comments and the opportunity for stakeholders to contribute to the process.</p> <p>What stakeholders were involved in the process to date, such as compiling 303(d) list, determining TMDLs, schedules, priorities, etc?</p> <p>How and when will comments be incorporated in the process?</p> <p>It is important that all stakeholders be involved at the beginning if they are to have "ownership" in this process.</p> <p>You state "1998 303(d) list of impaired waters is</p>	<p>1) The KDOW, with guidance from US EPA Region 4, has been involved in development of the 303(d) list and prioritization of listed waters for TMDL development. The waterbody assessments are conducted by using data and information from several sources. Please refer to the sections: Methods of Assessing Use Support for 1998 303(d) Report and Monitoring Programs for a description of data sources. Through the public comment period the DOW is seeking additional input from interested individuals, organizations, and/or agencies. Any and all comments received during the comment period for the draft 1998 303(d) list will be addressed. Comments will be addressed in this response to comments document and can result in modifications to the draft 1998</p>

<p>completed and being released for public comment". It seems some stakeholders such as Conservation Districts need to be given some more time to react.</p>	<p>303(d) list. We agree that all stakeholders should be involved in the TMDL process. The original two week comment period was extended by an additional two weeks to allow for more time to review and respond to the draft 303(d) list.</p>
<p>2) Specific watersheds and technical issues.</p>	<p>2) The value of 1.7 million cubic feet of animal waste was taken from Fleming Creek</p>
<p>Drainage area for targeted waterbodies, pollutant source partitioning, and models used to analyze different scenarios are but a few of the technical issues that DOC would like to be involved with.</p>	<p>Demonstration Project Pre-BMP Report, December 1995, Division of Water. The report indicates that there were approximately 48,500 head of cattle in Fleming County. The total dairy cow population in this county was estimated to exceed 10,000 animals. This data was referenced from Kentucky Department of Agriculture, Statistics Service , 1990-91, Kentucky agriculture statistics 1988 and United States Department of Agriculture, Soil Conservation Service, Cynthiana, Ky, 1992, ACP water quality special project request: Fleming Creek water quality project. The wording in the text has been changed to more closely resemble that found in the original KDOW report.</p>
<p>Fleming Creek - How was the 1.7 million cubic feet of animal waste going into local streams estimated?</p>	<p>The statement indicating that attainment of water quality standards in North Fork Kentucky River will be difficult to achieve is by no means an excuse. The statement is meant to relay the complexity of pollution sources to the North Fork Kentucky River and the problems and extra effort associated with efficient wastewater collection and treatment in this region and topography. Similarly, DOW agrees there are situations where agricultural BMP installation is more difficult due to topography and/or finances, although this does not alter the need for water quality protection.</p>
<p>North Fork Kentucky River - Full attainment with water quality standards will be difficult to achieve - is this an excuse? What about agriculture where unique features and/or financial demands make installation of BMPs unlikely?</p>	<p>3) All data used in waterbody assessment for this report and others are evaluated to ensure its validity and accuracy. The type and methodologies are evaluated to ensure consistency in assessments.</p>
<p>3) Citizens' participation in contributing to existing evidence.</p>	<p>4) The Act was passed by the Kentucky General Assembly; changing the requirements of the Act are beyond the scope of the 303(d) report.</p>
<p>One concern relates to assessing and determining impaired waters. The standards and methodologies used in data collection and interpretation, and in the determination of impairments, through informal or non-scientific procedures and data should be evaluated prior to consideration to determine their accuracy.</p>	
<p>4) Agriculture Water Quality Act.</p>	
<p>A change in the year 2000 deadline should be made</p>	

<p>to allow for BMPs to be in place by October 2001.</p> <p>The Agriculture Water Quality Act provisions for the establishment of Priority Protection Areas could be used as a vehicle for additional BMP needs.</p> <p>5) TMDL development, schedules and priorities for implementation. Conservation districts need to be involved up-front in TMDL Plan development. Rules for resources allocation will need to be created as TMDLs are established and activities are targeted for BMP implementation.</p>	<p>Comment noted.</p> <p>5) Conservation districts will necessarily be involved in TMDL development and implementation for waters impaired by agricultural sources.</p>
<p>United States Environmental Protection Agency</p> <p>1. Region 4 (EPA) has questions that certain waters included on the 1996 305(b) report for the State of Kentucky have been omitted from the draft 1998 303(d) list. If the State considers that the omission is appropriate additional explanation and/or good cause documentation must be submitted.</p> <p>Levisa Fork (116.2-124.1) Render Creek Little Eagle Creek Fishpool Creek Big Lily Creek Licking River</p> <p>2) Region 4 has identified certain pollutants of concern which were included on the 1996 303(d) list for Kentucky and were omitted from the 1998 draft list. Region 4 considers it appropriate to include the waters and pollutants on the 1998 list. If the State considers that the omission is appropriate additional explanation and/or good cause documentation must be submitted.</p> <p>Attachment A</p>	<p>1) <u>Fishtrap Lake (Levisa Fork)</u> met all uses in most recent monitoring. <u>Render Creek</u> still has a pH problem and remains on the 1998 list. <u>Little Eagle Creek</u> was never sampled and was erroneously assessed in last two 305(b) reports. It should have been, and will remain, unassessed. <u>Fishpool Creek</u> was sampled by Louisville MSD for all pollutants previously listed and was found to fully support aquatic life. <u>Big Lily Creek</u> will remain on the 1998 list until sampling proves that it meets aquatic life use. <u>Licking River</u> near Salyersville has not had recent biological sampling and therefore will remain on the 1998 list for organic enrichment/low DO. However, chlorides and salinity have been documented to no longer be a problem in this area of the river and should not have been pollutants of concern on 303(d) lists since 1994.</p> <p>2) <u>Cloverlick Creek</u> - suspended solids and habitat alteration will be added to the list of pollutants. <u>Goose Creek</u> - Approximately 25 package plants have been eliminated in the watershed since the last reporting cycle. Data from MSD reflects this with significant decline in nutrient concentrations; DO is not a problem either. However, it will remain on the 1998 list until biological data, which previously indicated nonsupport, shows improvement. <u>Little Goose Creek</u> - recent monitoring by MSD showed metals to not be a problem; however, organic enrichment/low DO will be added back onto the 1998 list <u>Middle Fork Beargrass Creek</u> - only one low DO</p>

reading since 1994 in MSD dataset; however, CSOs thought to contribute to much of problem have not been eliminated so will put organic enrichment/low DO back on 1998 list and will continue to monitor

Mill Creek (Jefferson Co.) - only one low DO reading since 1991, but MSD reported algal blooms, data contain several high phosphorus levels, and dozens of package plants remain in basin, so it remains on the 1998 list; also, siltation is a more appropriate cause than turbidity

South Fork Beargrass Creek - recent data from MSD does not show metals to be a problem; however, last biological data showed impact, so nutrient enrichment/low DO will remain on the 1998 list

Woolper Creek - organic enrichment/ low DO will be added to list of pollutants

Brooks Run - organic enrichment/low DO will be added back to the 1998 list and segment will be extended to the mouth (0.0)

Fern Creek (Northern Ditch) - recent monitoring by MSD showed no metals problems; however, numerous package plants still in basin and phosphorus levels sometimes very high, so will put organic enrichment/low DO back on 1998 list and will also add nutrients

Mill Creek (Hardin Co.) - DMRs previously indicated significant chlorine violations at facility on Mill Cr; recent DMRs only show one violation since 1995; organic enrichment / low DO were mistakenly listed as a cause in 1996 and have been removed

Pond Creek (Jefferson Co.) - the draft 1998 list is correct for this stream; another Pond Creek (Oldham and Jefferson counties) is actually the stream with chlorine and nutrient problems and it is added to the final 1998 list; the two streams were mistakenly put as one on the 1996 list

Clarks River - sediment in the 1996 report should have been only suspended solids or siltation; we think that siltation is a more appropriate description of the cause in this case

Roaring Paunch Creek - 1996 listing as impaired was incorrect; original data sheet indicates threatened only; 1998 listing of pH as cause is based on older monitored data that should have been used in 1996

Rock Creek - 1996 causes were in error; recent NPS data indicates pH is the problem

Little Pitman Creek - it appears that code for source (0200, municipal discharge) was mistakenly listed as cause (pesticides); there is no data and no reason to think pesticides is a cause; there is no reason to list unknown toxicity when causes of metals and nutrients are listed

Copper Creek - the cause in the 1996 report should have been siltation, not nutrients

Red River - ammonia was mistakenly applied as a cause to this segment in 1996; it only applied to a downstream segment, and recent DMR data showed that it was not a problem in the latest reporting period

South Elkhorn Creek - pesticides will be added as a cause; data source is dated USGS NAWQA study, but will be left on until re-sampled in watershed approach; organic enrichment/low DO also will remain on the 1998 list

Allen Fork - siltation is a better description of the cause than suspended solids; nutrients will remain on the 1998 list

Muddy Fork - recent sampling by MSD did not show metals to be a problem; also, the only two package plants left in the basin were removed prior to this reporting period, and the nutrient and DO data were much improved; however, it will remain on the 1998 list until biological data, which previously indicated nonsupport, show improvement

Rolling Fork - pathogens will be added as the cause

Little Clear Creek - sediment is not the appropriate cause; should be suspended solids; sulfate and metals were mistakenly listed as causes in 1996; monitored data indicate pH and habitat alterations should also be listed as causes

Pitman Creek - nutrients were mistakenly listed as a cause in 1996; unknown toxicity will be listed as the cause

Lewis Creek - recent sampling showed pH was no longer a problem, only siltation

Knox Creek - siltation will be added back as the cause; unknown toxicity was mistakenly used
Biological sampling does not always identify the pollutant of concern, only that the biological community is impacted. Also, often when the cause of impairment is listed as unknown it is because other agencies' biological data were used and no determination of cause was made. Except for Gunpowder Creek, the streams mentioned are

Additionally, the following waters in Table 3 of the list have "Cause Unknown" listed as the only pollutant of concern:

Gunpowder Creek (Boone Co)

Beechy Creek (Calloway Co)

Champion Creek (McCracken Co)

Island Creek (McCracken Co)

Jonathan Creek (Calloway and Marshall Co)

The State is requested to provide explanation of the meaning of this pollutant of concern.

3) Per the narrative discussion of the draft listing package, the State's prioritization is based upon the type, extent, and intensity of impairment. It is unclear how uses to be made of the waters factor into the priority ranking.

4) It is requested that the State include, in the final 1998 303(d) list, a clear statement identifying the waters targeted for TMDL development in the next two years.

in the lower Tennessee River basin and were assessed with biological data collected by TVA.

3) Waterbodies are prioritized based upon the type, extent, and intensity of impairment. Waterbodies within Kentucky for the most part share similar uses. They are assessed for support of warm water aquatic habitat and primary and secondary contact recreation criteria. Furthermore, a waterbody is assessed for drinking water use if a drinking water intake exists in that waterbody. No assessed stream or river failed to support drinking water use criteria. Except for the Ohio River, all waters with fish consumption advisories have ongoing remediation to eliminate this impairment. The fish consumption advisory posted for the Ohio River is related to legacy contaminants, and recent fish tissue sampling has indicated a downward trend in PCB and chlordane concentrations. All waterbodies listed as "not supporting" are given first priority in TMDL development for their particular basin. All "partial support" waterbodies are given a second priority ranking. Waters will be further prioritized within each river basin management unit factoring in the use impaired, risk, and extent of public concern. The text has been changed for clarification.

4) All streams and lakes listed as "In Progress" in table 2 and a portion of table 6 are scheduled for TMDL completion within the next two years. KDOW has targeted 1) Elkhorn Creek (South Fork Elkhorn, Town Branch, and Cane Run creeks) and 2) upper Salt River for pathogens TMDL development by 2000. Additionally, several western Kentucky 3) streams (e.g., Beech Creek, Brier Creek, Craborchard Creek, Cypress Creek, Flat Creek, Pleasant Run, Cane Run, Sugar Creek)

<p>5) Kentucky's draft 1998 303(d) list does not include any statement as to whether or not the State actively solicited research being conducted or reported by local, state, or federal agencies; members of the public; or academic institutions. The State should consider inclusion of a discussion in the final list.</p> <p>6) The narrative discussion of Kentucky's draft 1998 303(d) list does include a general description of the data and information used in the development of the draft list. EPA Region 4 has determined that an index of all specific sources of data and information will be required in order to support our future approval/disapproval of the list.</p> <p>7) The draft 1998 303(d) listing package indicates that conventional pollutant data collected prior to October 1995 may not have been used and that metals data collected prior to October 1994 may not have been used in the identification of the 303(d) listed waters. There is no provided rationale for any decision to not use any existing and readily available water quality-related data and information.</p>	<p>with impaired use for aquatic life and swimming due to low pH from acid mine drainage are slated for TMDL development by 2000. The text has been changed to indicate these goals.</p> <p>5) The list of impaired streams and lakes for TMDL development (Tables 2, 3, 4, and 6) was derived primarily by reviewing all known and readily available water quality and biological data that could be found for the state's waters. The KDOW actively solicited water quality and biological data collected or reported by local, state, and federal agencies, as well as private organizations and academic institutions. The text has been changed to more accurately state data sources.</p> <p>6) A detailed index of specific data sources will be provided to EPA. Additionally, refer to sections: Methods of Assessing Use Support for 1998 303(d) Report, and Monitoring Programs for a description of data sources.</p> <p>7) Data collected prior to October 1995 were used where more recent data were not available. Generally, if these data were less than five years old, the waters were considered to be monitored. However, even if the data were older than five years, the waters were often considered monitored if the data were still believed to be representative of current conditions. The most recent data available were used, although no data were disregarded based solely upon its age. In some instances, previously listed waters were retained on the 1998 list because there were no new available data. The text has been changed accordingly to more accurately state how data were used.</p>
U. S. Fish and Wildlife Service	
<p>The U.S. Fish and Wildlife Service recommended the inclusion of several streams and pollutants for aquatic life use impairment, often for habitat disturbances. Specific mention was made of habitat alterations (several instances also included siltation as the pollutant of concern) in watersheds of the upper Pond Creek, Mill Creek, Beargrass Creek, Goose Creek, Bayou de Chien, Buck Creek, the upper Cumberland River harboring federally threatened blackside dace populations, Flat Creek, Lick Creek, Pond River, Brier Creek, Craborchard</p>	<p>With the initiation in 1998 of the watershed initiative in the Kentucky River basin, many of the streams mentioned by USFWS will be assessed and their concerns addressed. However, the 1998 303(d) list of streams is based on currently available instream monitoring data that indicate impairment of aquatic life and other uses. General statements that impacts have occurred or causes are present in a stream or watershed without instream water quality or biological data to indicate impairment are not sufficient to place</p>

<p>Creek, Pleasant Run, Elk Creek, Drakes Creek, and tributaries of Levisa Fork and Tug Fork with significant mining operations.</p> <p>Specific mention was also made of contamination of mussels and sediment in the Little South Fork Cumberland River</p>	<p>them on the 303(d) list. The division will be glad to examine data not previously at its disposal to assess streams for inclusion on the 303(d) list.</p> <p>While undoubtedly many of the streams mentioned by the USFWS have been impacted to some extent, the division has also found streams to fully support aquatic life use even when habitat and land use disturbances have occurred.</p> <p>Some specific comments on the watersheds mentioned are:</p> <p>The division performed extensive biological and water quality sampling of Bayou de Chien that characterized a segment from about stream mile 14 - 26. The segment was found to fully support aquatic life use.</p> <p>The division and Eastern KY Univ. performed extensive biological sampling of Buck Creek (Pulaski County) over a 6-year period and found it to fully support aquatic life use.</p>
	<p>Any permitted activity in streams of the upper Cumberland River basin containing blackside dace must be conducted in a manner that ensures that populations of the dace are protected, and monitoring is performed by biologists before and during operation to document compliance.</p> <p>Biological sampling of the Little South Fork Cumberland River by the division from 1992-96 found full support or full support-threatened for aquatic life use.</p>
	<p>The division will bear this information in mind when sampling sites are chosen for this basin during the third year of the watershed cycle (2000).</p>
<p>Sierra Club - Cumberland Chapter</p>	
<p>1. The number of streams in the draft 1998 report are fewer than in the 1996 305(b) report.</p> <p>2. Impaired waters should not be de-listed until water quality have been met.</p>	<p>1. The list of streams in the draft 1998 303(d) report should be compared to the approved 1996 303(d) report, not the 1996 305(b) report. The 303(d) and 305(b) reports are not meant to be the same. For example, problems identified on waters in the 305(b) report for the 2-year reporting period that have already been or are expected to be addressed in the next 2 years are not required to be listed under 303(d).</p> <p>2. We agree. Ongoing TMDLs are not de-listed, they were put into a separate list to show that they have already been listed and the TMDLs are being worked on. Streams are not de-listed until a TMDL</p>

3. Little progress has been made on ongoing TMDL projects.

has been approved or data indicates that the problem no longer exists.

3. The KDOW disagrees that little progress has been made in on-going TMDL projects, both on a state-wide basis as well as those specifically listed in this comment (Chenoweth Run and Floyds Fork). Chenoweth Run is expected to improve with the completion of the upgrades and phosphorus removal requirements at the Jeffersontown wastewater treatment plant (WWTP). Major upgrades such as this take time, and are expected to be fully operational at the next permit issuance in the year 2000. This action would not have occurred without the study conducted by the KDOW, with cooperation from both MSD and other local authorities and interested parties. Division staff participated in the development of the document "Implementation Plan Guidelines for Environmental Management Practices During Land Development in Chenoweth Run Watershed, 1996", prepared by local government with input and participation from local citizens. It is our understanding that this document has yet to be implemented by local authorities. Other issues that need to be addressed were specifically listed in the TMDL report, such as tree planting and creation of riparian zones to filter stormwater runoff before it reaches local waterways. The KDOW has no regulatory authority to demand these activities be conducted.

As a result of the Floyds Fork TMDL, 20 requests for new or expanded wastewater treatment facilities have been denied by the KDOW at locations throughout the basin. Several requests have been approved, depending on specific location and regionalization potential. Ten WWTP's have been removed by connection to other facilities, primarily the Cedar Creek WWTP noted in the comment. Our records indicate 6 more facilities will be connected to Cedar Creek and eliminated in mid 1998. The Floyds Fork Regional WWTP to be built in the next few years will eliminate 10 to 12 existing package treatment plants in the basin. Both the Cedar Creek and Floyds Fork facilities are or will eliminate existing areas currently using septic tanks for sewage disposal. Efforts underway in Oldham County's Crestwood regional project will eliminate several existing package plants and other areas currently

	<p>on septic tanks. This project will also be completed in the next few years.</p> <p>We agree that water quality problems will persist if urban growth continues without proper controls. The agricultural community also needs to play its part by implementing a variety of BMP's. Efforts are underway on both issues, but more needs to be done. The KDOW does not, however, have regulatory authority over urban growth or agriculture. We have been and will continue to be available to work with local interests and authorities to improve these conditions.</p>
<p>4. All available data, including that from citizen monitoring, should be used.</p>	<p>4. We agree that all available data should be used wherever possible. We actively solicit data from numerous entities as explained elsewhere. Volunteer monitoring data are screened to see if any obvious problems are present. As with our own data, we do not see many problems with volunteer data meeting water quality criteria. However, there are two major problems in using volunteer data. First, it is difficult to use infrequently collected water quality data from any source, including the Division of Water, to assess aquatic life use. We typically use three years of data from at least bimonthly sampling. Second, the analytical techniques must be EPA approved. Colorimetric tests using kits often used by volunteer groups do not provide the accuracy needed in many cases.</p>